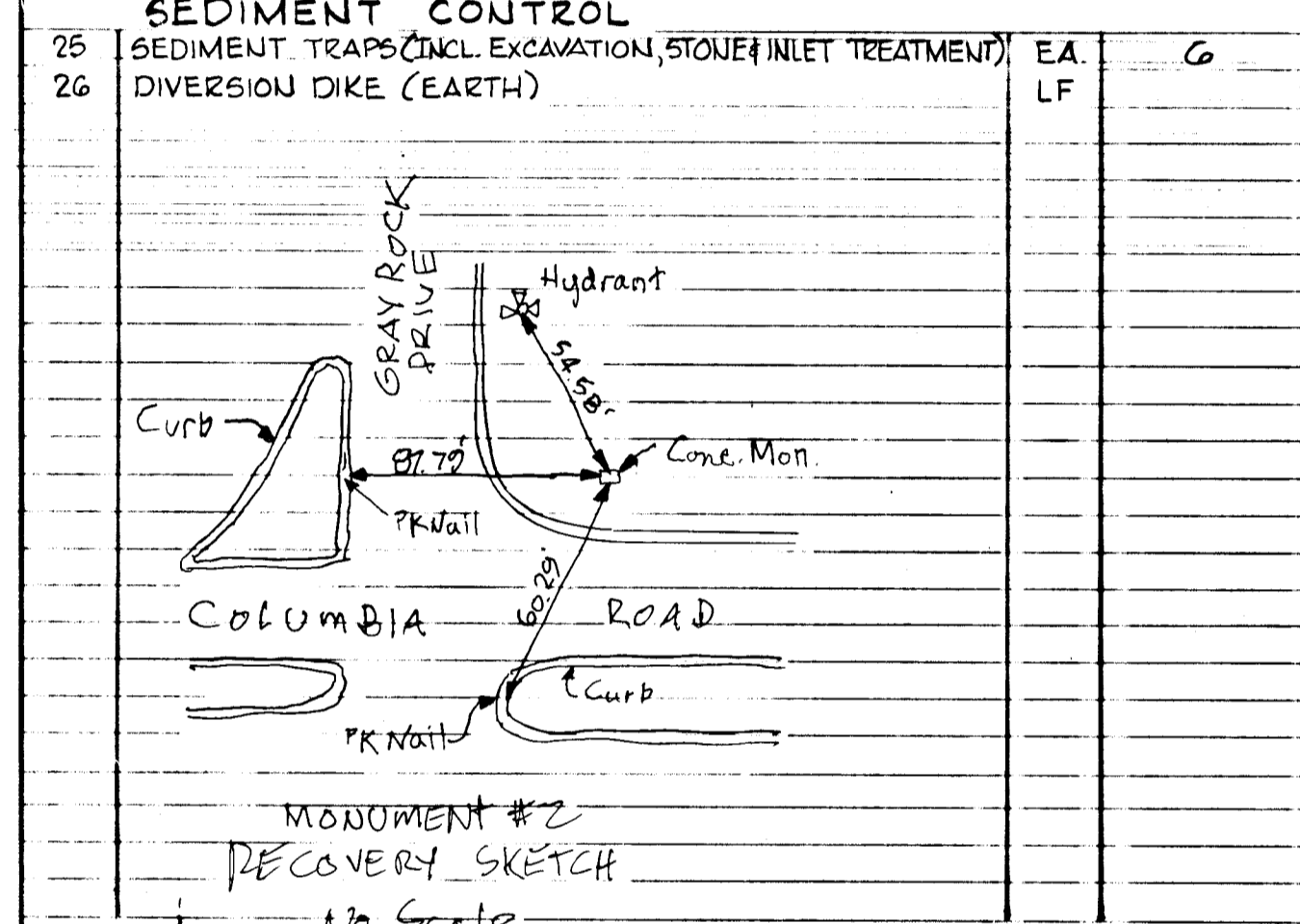


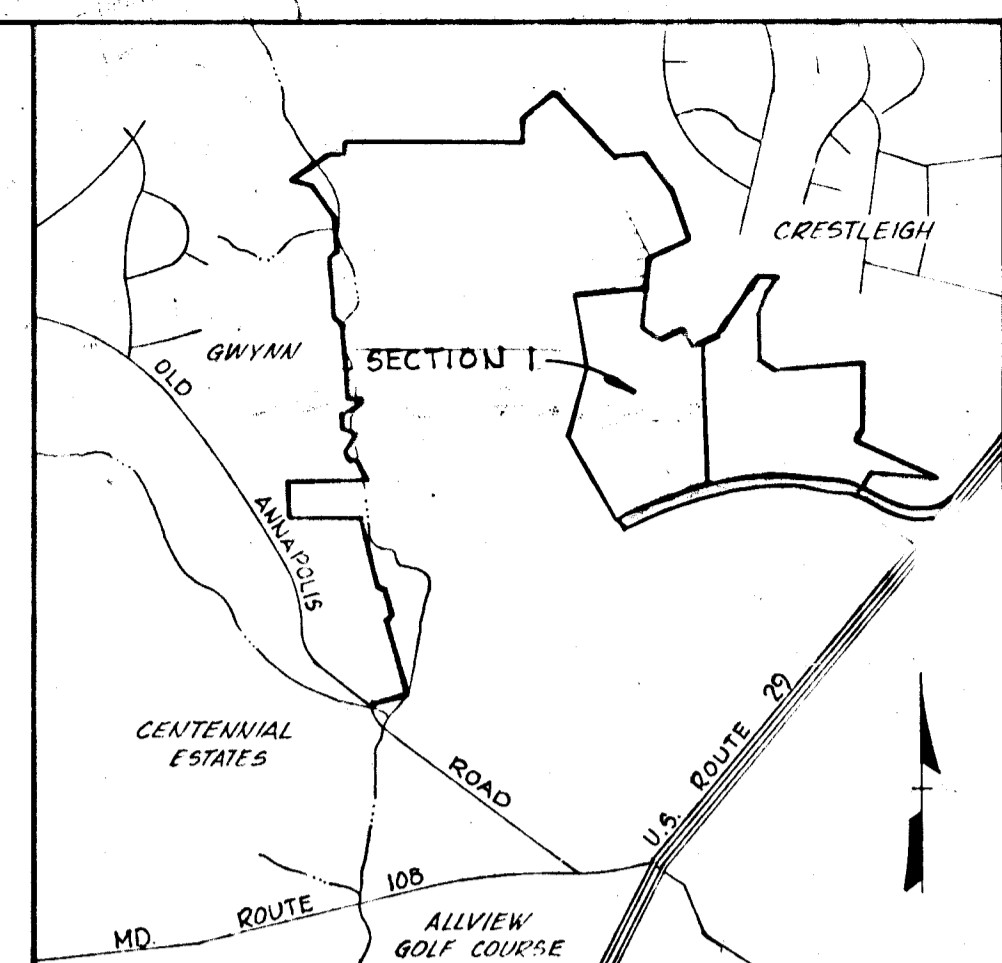
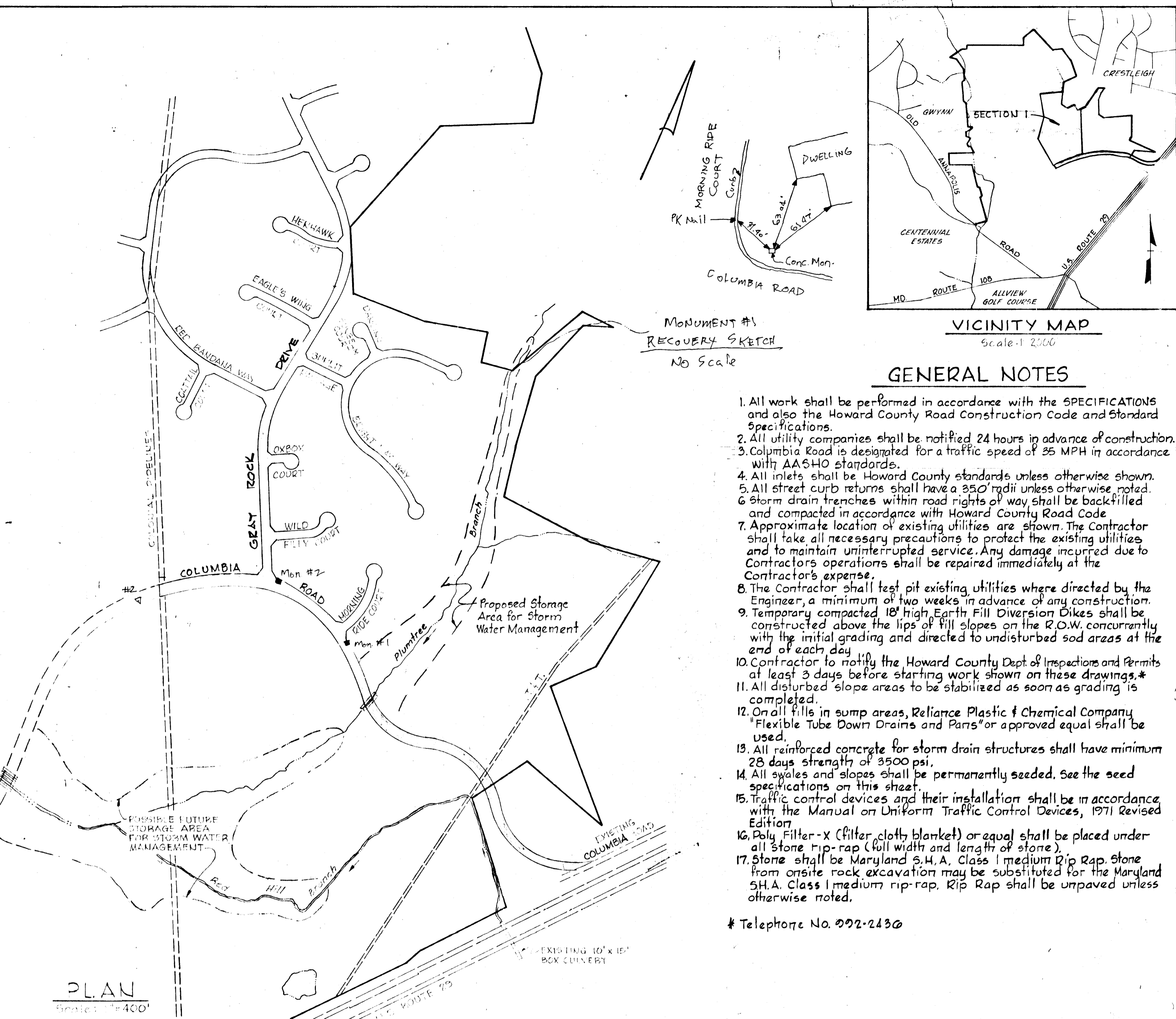
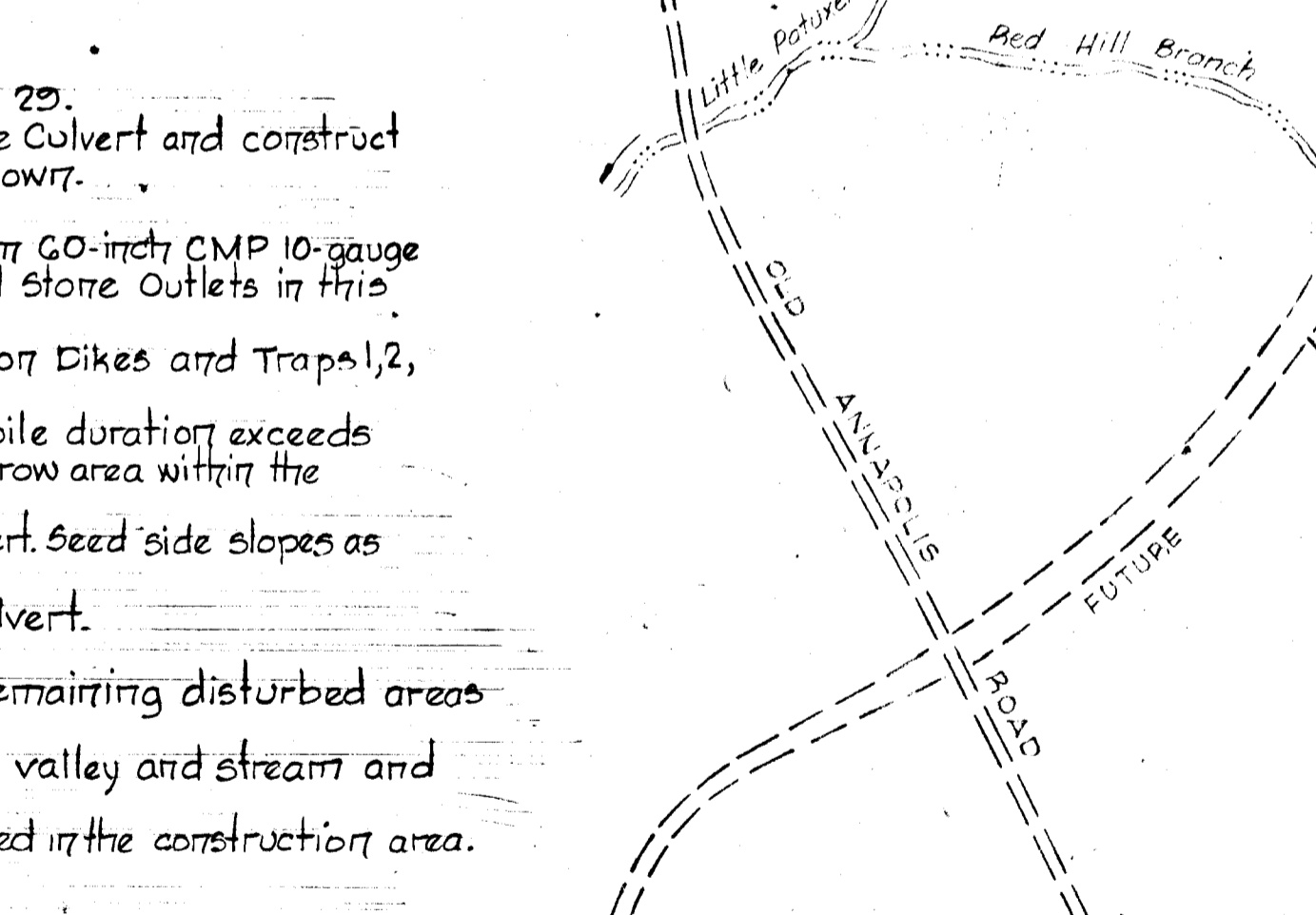
ITEM	DESCRIPTION	UNIT	QUANTITIES
1	TOPSOIL STRIPPING UNDER FILLS	CY	
2	UNCLASSIFIED EXCAVATION (ROADWAY)	CY	
3	BIT. CONC. SURFACE COURSE (1 1/2" THICK)	SY	17,590
4	BIT. CONC. BASE COURSE (5" THICK)	SY	17,590
5	MOUNTABLE CURB	LF	7,975
6	CONCRETE SIDEWALK (4" THICK)	LF	5,990
7	R/W AND SLOPE STABILIZATION	SY	
8	TRANSITION CURB AT "A" INLETS	EA.	
9	STANDARD A-5 INLET	EA.	5
10	STANDARD A-10 INLET	EA.	3
11	STANDARD MANHOLE	EA.	3
12	TYPE "A" HEADWALL (5:1 & 5:2)	EA.	2
13	SPECIAL HEADWALL (5:3)	EA.	1
14	SPECIAL HEADWALL (5:4)	EA.	1
15	TWIN 18" x 11" 10" S.P.P.A.	EA.	1
16	15" RCP CL. III	LF	31
17	15" RCP CL. IV	LF	200
18	18" RCP CL. III	LF	204
19	18" RCP CL. IV	LF	89
20	42" RCP CL. IV	LF	100
21	DITCH EXCAVATION	CY	
22	RIP RAP DITCH (Md. SHA CL. I MEDIUM) 9" THICK	SY	
23	POLY FILTER X CLOTH	SY	
24	DITCH STABILIZATION (SEEDING)	SY	

NO	DESCRIPTION
1	TITLE SHEET
2	COLUMBIA ROAD Sta. 256+22 to Sta. 270+00
3	COLUMBIA ROAD Sta. 270+00 to Sta. 282+00
4	COLUMBIA ROAD Sta. 282+00 to Sta. 295+00
5	STORM DRAIN PROFILES AND ROADWAY DETAILS
6	STORM DRAIN PROFILES AND CULVERT SPECIFICATIONS
7	PLUMTREE BRANCH CULVERT DETAILS
8	BORROW AREA GRADING AND SEDIMENT CONTROL
9	DRAINAGE AREA MAP
10	SEDIMENT CONTROL
11	SEDIMENT CONTROL



NO	DESCRIPTION
4A	ROAD STAKEOUT PLAN
#1	P.K. Nail in firtop in macadam shoulder 45' left of P.C. Sta. 256+21.90 Elev. 372.70
#2	Jack & hub 150' beyond Sta. 285+03.63 pipe extended Elev. 365.36

- ### SEQUENCE OF CONSTRUCTION
- Access to the site shall be by way of the existing Columbia Road at Route 29.
 - Clear, grub and strip the Columbia Road extension to the proposed Plumtree Culvert and construct the Diversion Dikes and Stone Outlets for this portion of the road as shown.
 - Construct the 42 inch culvert and sanitary sewer of station 262+40.
 - Construct a temporary access road across the Plumtree Branch. A minimum 60-inch CMP 10-gauge pipe culvert shall be installed. Actual location of Diversion Dikes and Stone Outlets in this area will depend on the access road location.
 - Clear, grub and strip the remainder of the road and construct Diversion Dikes and Traps 1, 2, 3, 4, 5, and 6 for the borrow area.
 - Strip the borrow area. The topsoil stockpile shall be seeded if the stockpile duration exceeds 60 days. Locate the stockpile along the southern perimeter of the borrow area within the confines of the Diversion Dike.
 - Construct the road embankment to each side of proposed Plumtree Culvert. Seed side slopes as per Permanent Seeding specifications on this sheet.
 - Construct the Plumtree Culvert and complete the fill operation at the culvert.
 - Construct the storm drain systems and other utilities.
 - Final grade road subgrade, pave, construct curb and seed all remaining disturbed areas including the borrow area.
 - Remove the temporary access road and culvert, restore the stream valley and stream and stabilize all disturbed surfaces.
 - Remove the dikes, Traps and stone outlets after grass is established in the construction area.



MONUMENT #1
RECOVERY SKETCH
No Scale

GENERAL NOTES

- All work shall be performed in accordance with the SPECIFICATIONS and also the Howard County Road Construction Code and Standard Specifications.
- All utility companies shall be notified 24 hours in advance of construction.
- Columbia Road is designated for a traffic speed of 35 MPH in accordance with AASHTO standards.
- All inlets shall be Howard County standards unless otherwise shown.
- All street curb returns shall have a 350' radius unless otherwise noted.
- Storm drain trenches within road rights of way shall be backfilled and compacted in accordance with Howard County Road Code.
- Approximate location of existing utilities are shown. The Contractor shall take all necessary precautions to protect the existing utilities and to maintain uninterrupted service. Any damage incurred due to Contractor's operations shall be repaired immediately at the Contractor's expense.
- The Contractor shall test pit existing utilities where directed by the Engineer, a minimum of two weeks in advance of any construction.
- Temporary compacted 18" high Earth Fill Diversion Dikes shall be constructed above the lips of fill slopes on the R.O.W. concurrently with the initial grading and directed to undisturbed sod areas at the end of each day.
- Contractor to notify the Howard County Dept. of Inspections and Permits at least 3 days before starting work shown on these drawings.*
- All disturbed slope areas to be stabilized as soon as grading is completed.
- On all fills in sump areas, Reliance Plastic & Chemical Company "Flexible Tube Down Drains and Pans" or approved equal shall be used.
- All reinforced concrete for storm drain structures shall have minimum 28 days strength of 3500 psi.
- All swales and slopes shall be permanently seeded. See the seed specifications on this sheet.
- Traffic control devices and their installation shall be in accordance with the Manual on Uniform Traffic Control Devices, 1971 Revised Edition.
- Poly Filter-X (Filter cloth blanket) or equal shall be placed under all stone rip-rap (full width and length of stone).
- Stone shall be Maryland S.H.A. Class I medium Rip Rap Stone from onsite rock excavation may be substituted for the Maryland S.H.A. Class I medium rip-rap. Rip Rap shall be unpaved unless otherwise noted.

* Telephone No. 972-2430

PERMANENT SEEDING (SEE GENERAL NOTES)
 LIME = 2 TONS/ACRE AGRICULTURAL GROUND LIMESTONE
 FERTILIZER = 1000 LBS/ACRE (10-10-10)
 SEEDING = 100 LBS/ACRE OF THE FOLLOWING:
 20% KENTUCKY BLUE GRASS, 20% MERION BLUE GRASS,
 55% CREEPING RED FESCUE, 5% BENTON.
 Mulch Required - Mulch area with straw at the of 75 lbs./1000 s.f. or 1.1 tons/acre.
 Anchor with asphalt at the rate of 480 gallons/acre.
 Stabilization of slopes steeper than 3:1 shall be planted with crownvetch including 15 lbs./acres (0.34 lbs./1000 s.f.)
 Kentucky 31 Tall Fescue 40 lbs./acres (1 lb./1000 s.f.)

CERTIFICATION BY THE DEVELOPER
 I certify that all development and or construction will be done according to this plan of development and plan for Erosion and Sediment Control, and I also authorize periodic on-site inspection by the Howard Soil Conservation District or their authorized agents as are deemed necessary.
Walter E. Woodford 9/29/78
 Date

CERTIFICATION BY THE ENGINEER
 I certify that this plan for Erosion and Sediment Control represents a practical and workable plan based on my personal knowledge of the site conditions, and that it was prepared in accordance with the requirements of the Howard Soil Conservation District.
Kenneth A. McLeod 9/29/78
 Date

WHITMAN, REQUARDT & ASSOCIATES
 ENGINEERS
 BALTIMORE, MARYLAND 21202
Kenneth A. McLeod
 Kenneth A. McLeod
 Registered Engineer
 No. 1974

DEPARTMENT OF PUBLIC WORKS
 Chief, Bureau of Engineering
 OFFICE OF PLANNING AND ZONING
D. Ripley 8/3/79
 DATE

OWNER AND DEVELOPER
 THE HOWARD RESEARCH AND DEVELOPMENT CORP.
 COLUMBIA, MARYLAND

REVIEWER FOR _____ S.C.D.
 HOWARD
 AND MEETS TECHNICAL REQUIREMENTS
W. B. Burt 8/2/79
 SIGNATURE DATE
 U.S. SOIL CONSERVATION SERVICE

THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.
 APPROVED:
Wm. Rame 8-3-79
 HOWARD S.C.D. DATE

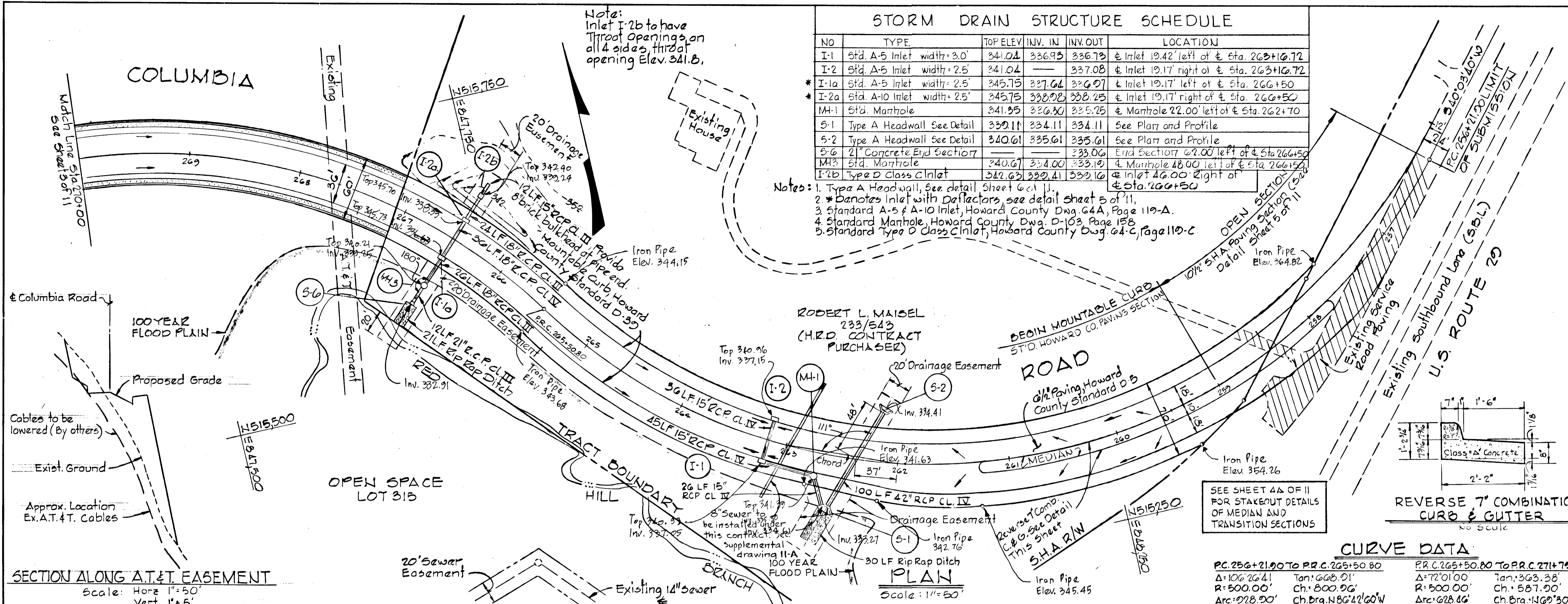
DORSEY HALL SECTION I AREA I ROAD CONSTRUCTION PLANS
 2ND ELECTION DISTRICT OF HOWARD COUNTY MD.
 OWNER AND DEVELOPER
 HOWARD RESEARCH AND DEVELOPMENT CORP.
 COLUMBIA MARYLAND
 Date _____ Scale: As Shown

STORM DRAIN STRUCTURE SCHEDULE

NO	TYPE	TOP ELEV	INV. IN	INV. OUT	LOCATION
I-1	Std. A-5 Inlet width=3.0'	341.04	336.93	336.73	± Inlet 19.42' left of ± Sta. 263+10.72
I-2	Std. A-5 Inlet width=2.5'	341.04	---	337.08	± Inlet 19.17' right of ± Sta. 263+10.72
* I-1a	Std. A-5 Inlet width=2.5'	345.75	337.64	336.97	± Inlet 19.17' left of ± Sta. 266+50
* I-2a	Std. A-10 Inlet width=2.5'	345.75	338.08	338.25	± Inlet 19.17' right of ± Sta. 266+50
M-1	Std. Manhole	341.35	336.30	335.25	± Manhole 22.00' left of ± Sta. 262+70
S-1	Type A Headwall See Detail	339.11	334.11	334.11	See Plan and Profile
S-2	Type A Headwall See Detail	340.61	335.61	335.61	See Plan and Profile
S-6	2" Concrete End Section	---	---	---	End Section 62.00' left of ± Sta. 266+50
M-3	Std. Manhole	340.67	334.00	333.19	± Manhole 18.00' left of ± Sta. 266+50
I-2b	Type D Class C Inlet	342.63	339.41	339.16	± Inlet 46.00' right of ± Sta. 266+50

Notes: 1. Type A Headwall, See detail Sheet 6 & 11.
 2. * Denotes Inlet with Deflectors, see detail Sheet 5 of 11.
 3. Standard A-5 & A-10 Inlet, Howard County Dwg. 64A, Page 119-A.
 4. Standard Manhole, Howard County Dwg. D-103, Page 153.
 5. Standard Type D Class C Inlet, Howard County Dwg. 64-C, Page 119-C.

LEGEND
 Existing paving to be removed.

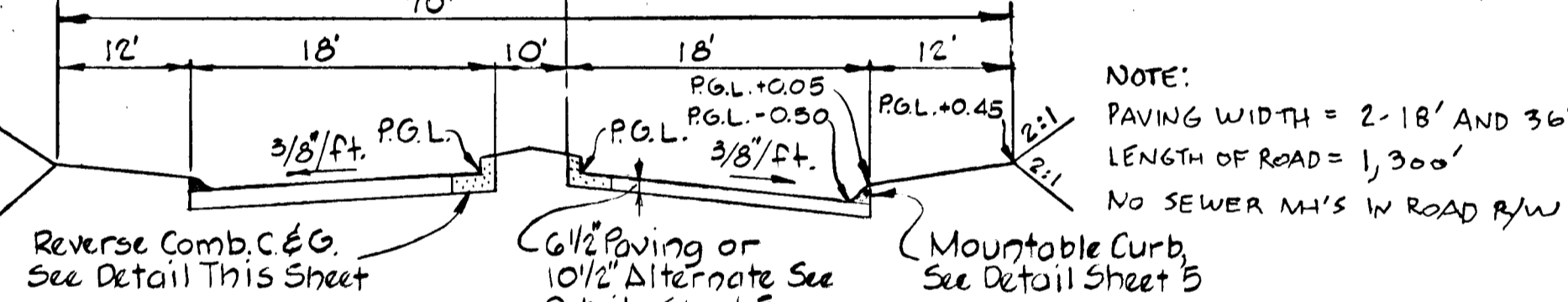


SECTION ALONG A.T.&T. EASEMENT
 Scale: Horz. 1"=50'
 Vert. 1"=5'

REVERSE 7" COMBINATION CURB & GUTTER
 No Scale

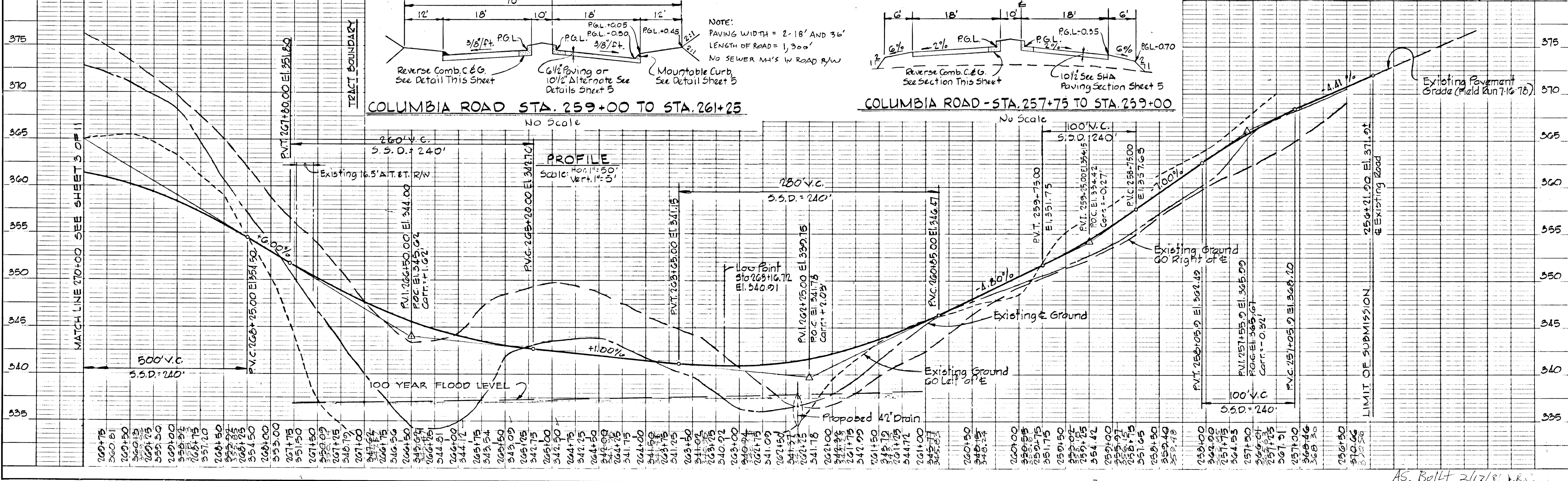
CURVE DATA

PC: 256+21.00 TO PRC: 265+50.80	PRC: 265+50.80 TO PRC: 271+79.76
Δ: 106°26'41"	Δ: 72°01'00"
R: 500.00'	R: 500.00'
Ch: 800.00'	Ch: 587.00'
Arc: 928.20'	Arc: 628.66'
Ch. Brg: N86°42'60"W	Ch. Brg: N60°30'10"W



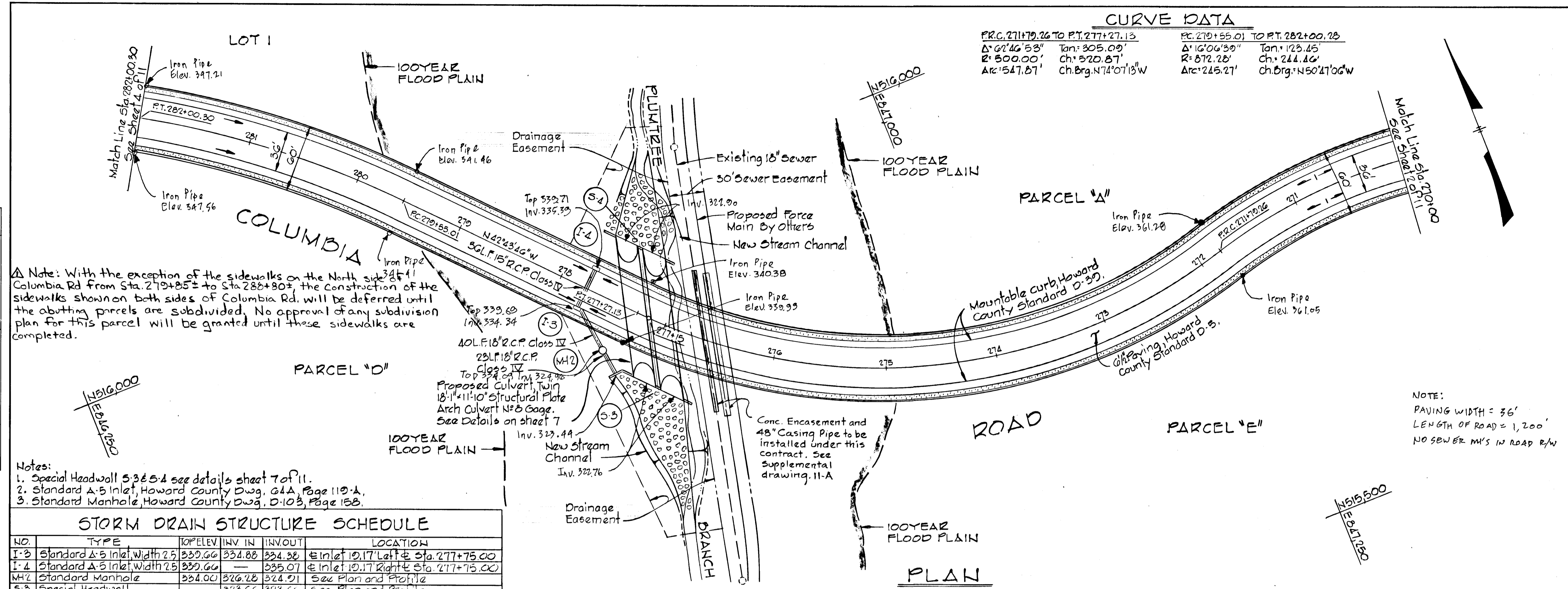
COLUMBIA ROAD STA. 259+00 TO STA. 261+25
 No Scale

COLUMBIA ROAD - STA. 257+75 TO STA. 259+00
 No Scale



PROFILE
 Scale: Horz. 1"=50'
 Vert. 1"=5'

Kenneth A. McCord
 KENNETH A. MCCORD
 REGISTERED ENGINEER
 NO. 1974



Note: With the exception of the sidewalks on the North side of Columbia Rd from Sta. 270+85± to Sta. 280+80±, the construction of the sidewalks shown on both sides of Columbia Rd. will be deferred until the abutting parcels are subdivided. No approval of any subdivision plan for this parcel will be granted until these sidewalks are completed.

- Notes:
1. Special Headwall 5-3 & 5-4 see details sheet 7 of 11.
 2. Standard A-5 Inlet, Howard County Dwg. 64A, Page 110-A.
 3. Standard Manhole, Howard County Dwg. D-103, Page 153.

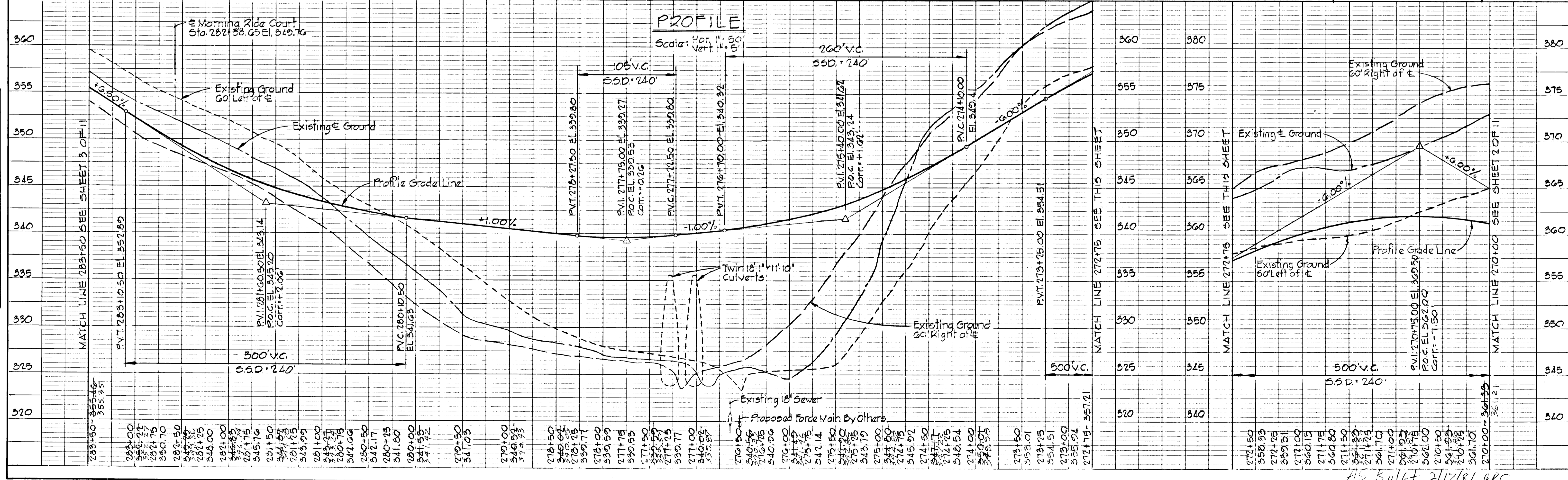
NO.	TYPE	PIPE ELEV.	INV. IN	INV. OUT	LOCATION
I-3	Standard A-5 Inlet, Width 2.5	337.66	334.88	334.38	at Inlet 10.17 Left of Sta. 277+75.00
I-4	Standard A-5 Inlet, Width 2.5	337.66	335.07	335.07	at Inlet 10.17 Right of Sta. 277+75.00
MH2	Standard Manhole	324.00	326.28	324.91	See Plan and Profile
5-3	Special Headwall	323.66	323.66	323.66	See Plan and Profile
5-4	Special Headwall	323.84	323.84	323.84	See Plan and Profile

PC	PT	PI	PT	PI
270+55.01	277+27.13	278+91.07	282+00.28	282+00.28
Δ: 67°46'53"	Tan: 305.09'	Δ: 16°06'39"	Tan: 123.45'	
R: 500.00'	Ch: 520.87'	R: 872.28'	Ch: 244.46'	
Arc: 547.87'	Ch. Brg. N74°07'13"W	Arc: 245.27'	Ch. Brg. N50°21'00"W	

DEPARTMENT OF PUBLIC WORKS
W.C. Falbert 8-13-79
 CHIEF, BUREAU OF ENGINEERING DATE

OFFICE OF PLANNING AND ZONING
J. Hupley 8/3/79
 CHIEF, DIVISION OF LAND PLANNING DATE

6-17-80	Δ	All Note on Sidewalks
REV. DATE	REV. NO.	REVISION DESCRIPTION
DORSEY HALL 2ND. ELECTION DISTRICT HOWARD COUNTY, MARYLAND		
OWNER AND DEVELOPER HOWARD RESEARCH AND DEVELOPMENT CORPORATION		
PROJECT AREA: SECTION I AREA I		
PROJECT TITLE: COLUMBIA ROAD STA. 270+00 to STA. 282+00		
SACLE: AS SHOWN	DATE:	
WHITMAN, REQUARDT AND ASSOCIATES ENGINEERS BALTIMORE, MARYLAND 21202		
<i>Kenneth A. McCord</i> KENNETH A. MCCORD REGISTERED ENGINEER NO. 1974		



DATE: _____ BY: _____
 CHECKED: _____
 NO. _____

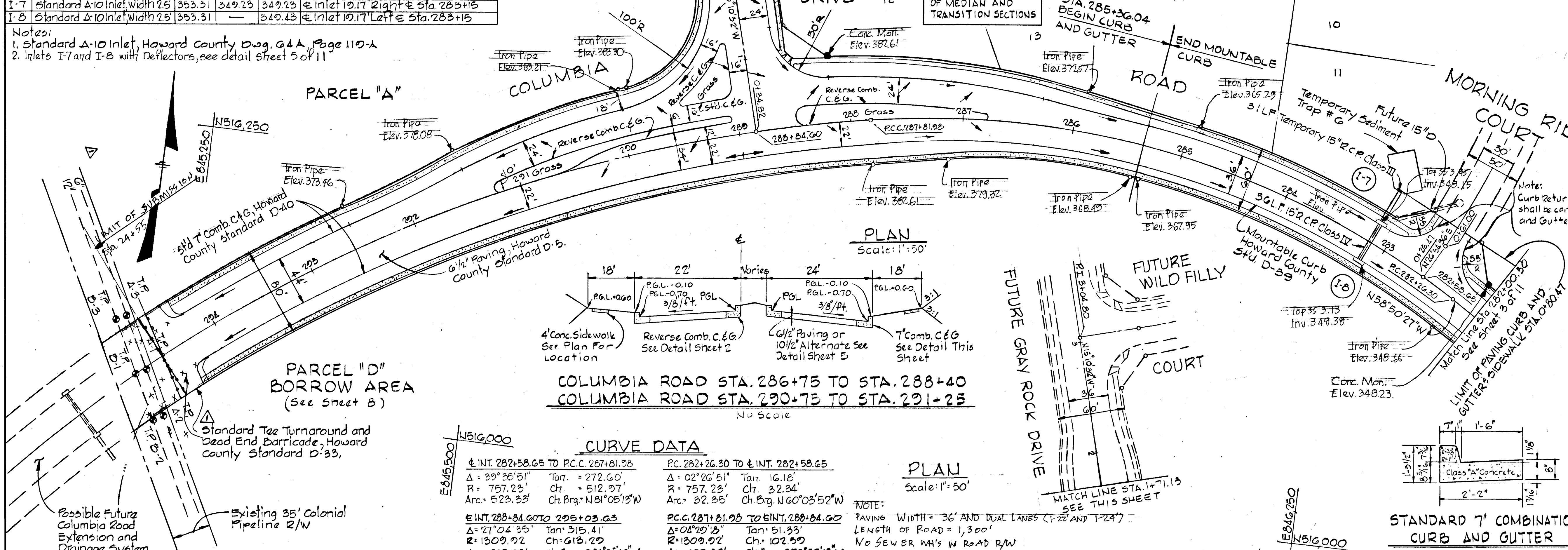
DATE: _____ BY: _____
 CHECKED: _____
 NO. _____

STORM DRAIN STRUCTURE SCHEDULE

NO.	TYPE	TOP ELEV. INV. IN	INV. OUT	LOCATION
I-7	Standard A-10 Inlet, Width 25"	353.31	349.23	at Int. 19.17 Right of Sta. 283+15
I-8	Standard A-10 Inlet, Width 25"	353.31	349.43	at Int. 19.17 Left of Sta. 283+15

Notes:
 1. Standard A-10 Inlet, Howard County Dwg. G-4A, Page 110-2
 2. Inlets I-7 and I-8 with Deflectors, see detail Sheet 5 of 11

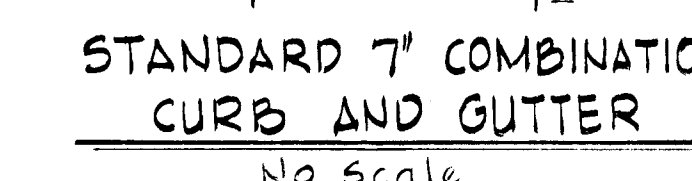
LIMIT OF PAVING, CURB AND GUTTER AND SIDEWALK STA. 1+71.13



CURVE DATA

INT. 282+58.65 TO P.C.C. 287+81.96	P.C. 282+26.30 TO INT. 282+58.65
$\Delta = 29^{\circ} 26' 51''$ Tan. = 272.60	$\Delta = 02^{\circ} 26' 51''$ Tan. = 16.18
R = 757.23' Ch. = 512.97'	R = 757.23' Ch. = 32.34'
Arc. = 523.33' Ch. Brg. = N81°05'13"W	Arc. = 32.35' Ch. Brg. = N60°05'52"W
INT. 288+84.00 TO 295+03.63	P.C.C. 287+81.96 TO INT. 288+84.00
$\Delta = 27^{\circ} 04' 35''$ Tan. = 315.41'	$\Delta = 04^{\circ} 25' 15''$ Tan. = 51.33'
R = 1309.92' Ch. = 613.25'	R = 1309.92' Ch. = 102.50'
Arc. = 619.03' Ch. Brg. = S61°05'16"W	Arc. = 102.62' Ch. Brg. = S76°52'13"W

NOTE:
 PAVING WIDTH = 36' AND DUAL LANES (1-22' AND 1-24')
 LENGTH OF ROAD = 1,300'
 NO SEWER MAINS IN ROAD R/W



DEPARTMENT OF PUBLIC WORKS
 W. O. Pinner 8-13-79
 CHIEF, BUREAU OF ENGINEERING DATE

OFFICE OF PLANNING AND ZONING
 William S. Galey 8-13-79
 CHIEF, DIVISION OF LAND PLANNING DATE

Note: With the exception of the sidewalks on the North side of Columbia Rd from Sta. 279+52 to Sta. 288+80 the construction of the sidewalks on both sides of Columbia Rd. will be deferred until the abutting parcels are subdivided. No approval of any subdivision plan for this parcel will be granted until these sidewalks are completed.

REV. DATE	REV. NO.	REVISION DESCRIPTION
6-17-80	1	All Note on Sidewalks
6-6-80	2	LIMIT OF SUBMISSION TO STA 294+55

DORSEY HALL
 2ND. ELECTION DISTRICT
 HOWARD COUNTY, MARYLAND

OWNER AND DEVELOPER
 HOWARD RESEARCH AND DEVELOPMENT CORPORATION

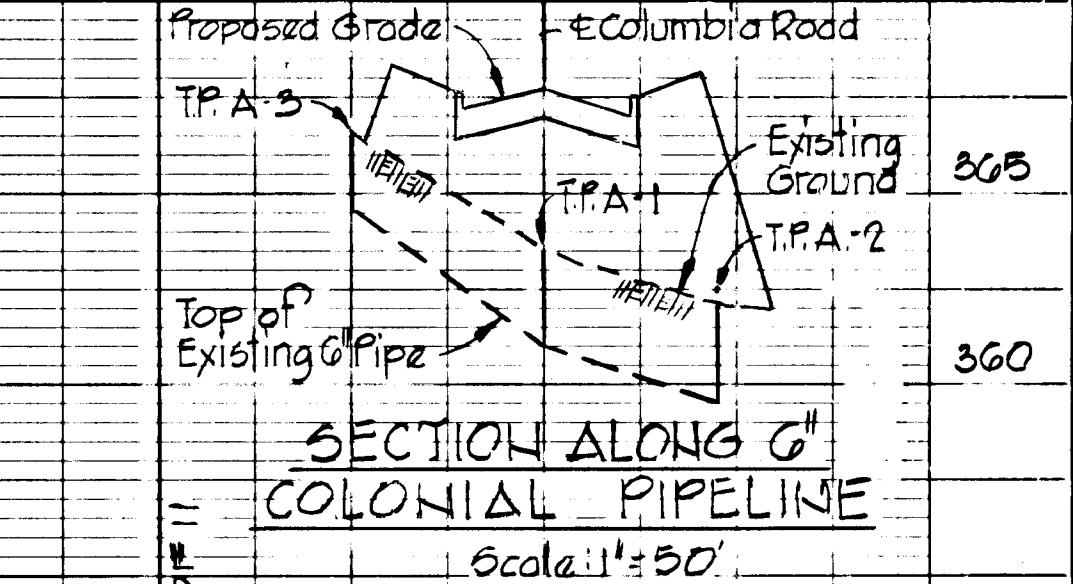
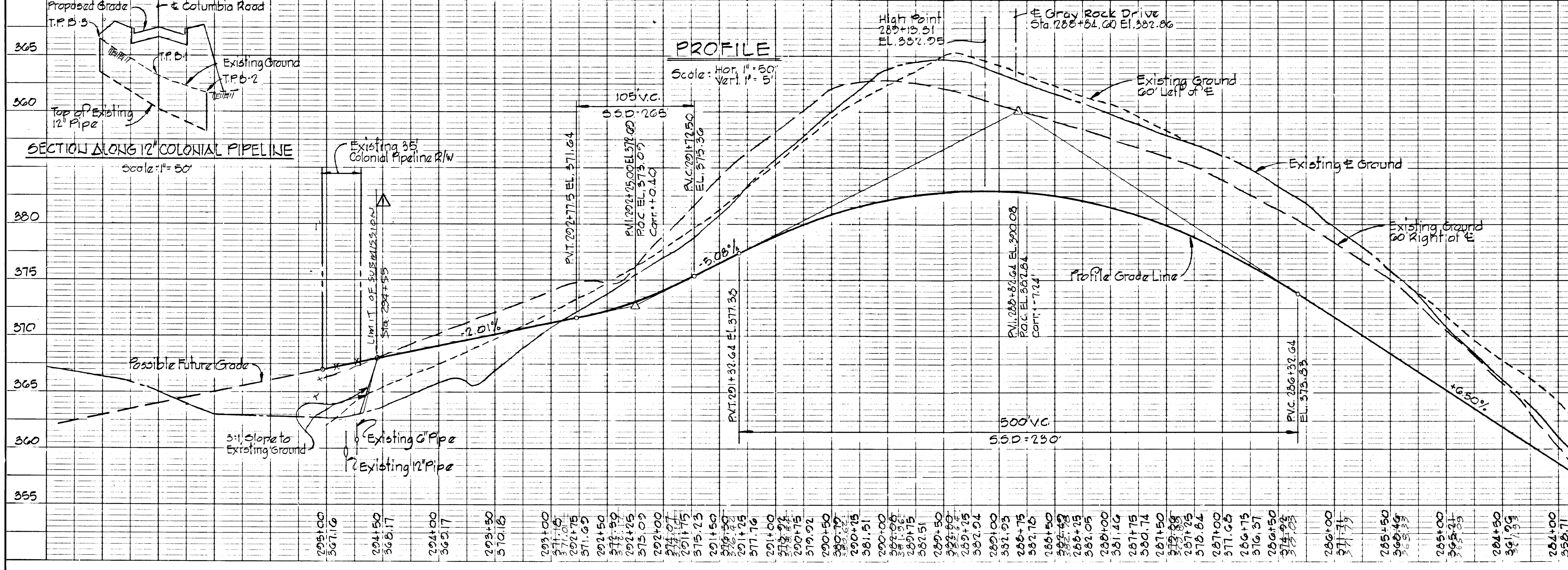
PROJECT AREA
 SECTION I AREA I

PROJECT TITLE
 COLUMBIA ROAD
 STA. 282+00 to STA. 295+00

SCALE: AS SHOWN DATE:

WHITMAN, REQUARDT AND ASSOCIATES
 ENGINEERS
 BALTIMORE, MARYLAND 21202

Kenneth A. McCord
 KENNETH A. MCCORD
 REGISTERED ENGINEER
 NO. 1974



COLONIAL PIPELINE TEST PIT DATA

Station	Existing Ground	Top of Pipe	Depth
6" PIPE			
A-1	363.5	361.0	2.5
A-2	362.1	359.4	2.7
A-3	369.7	364.6	2.1
12" PIPE			
B-1	363.2	360.2	3.0
B-2	361.7	358.3	3.4
B-3	366.3	363.4	2.9

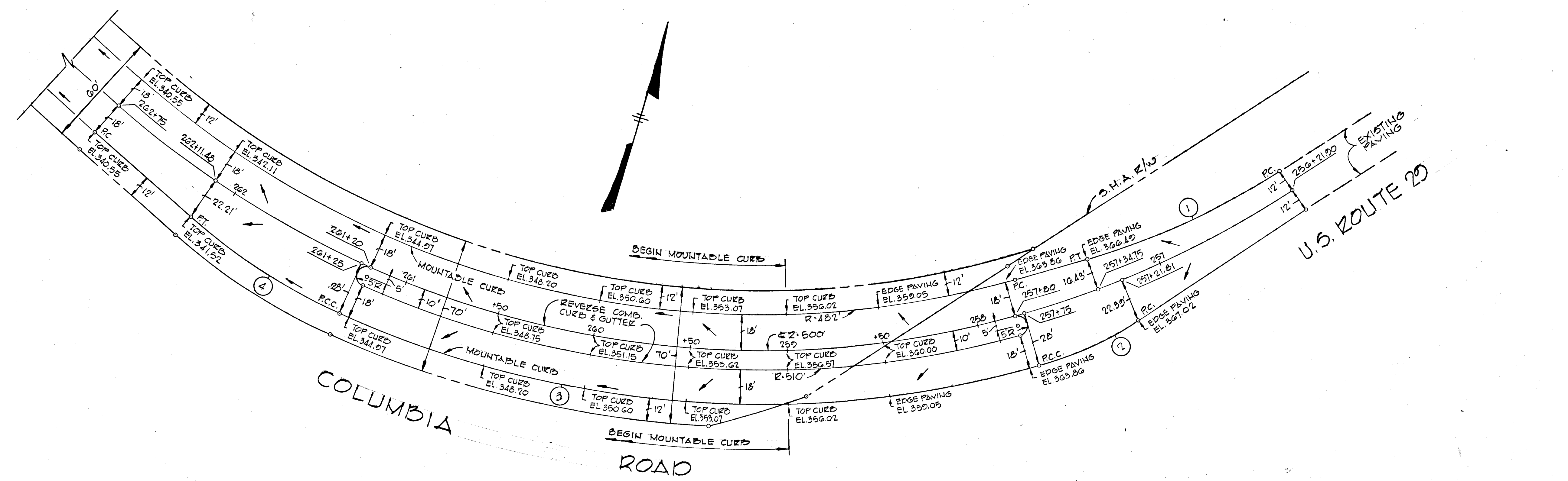
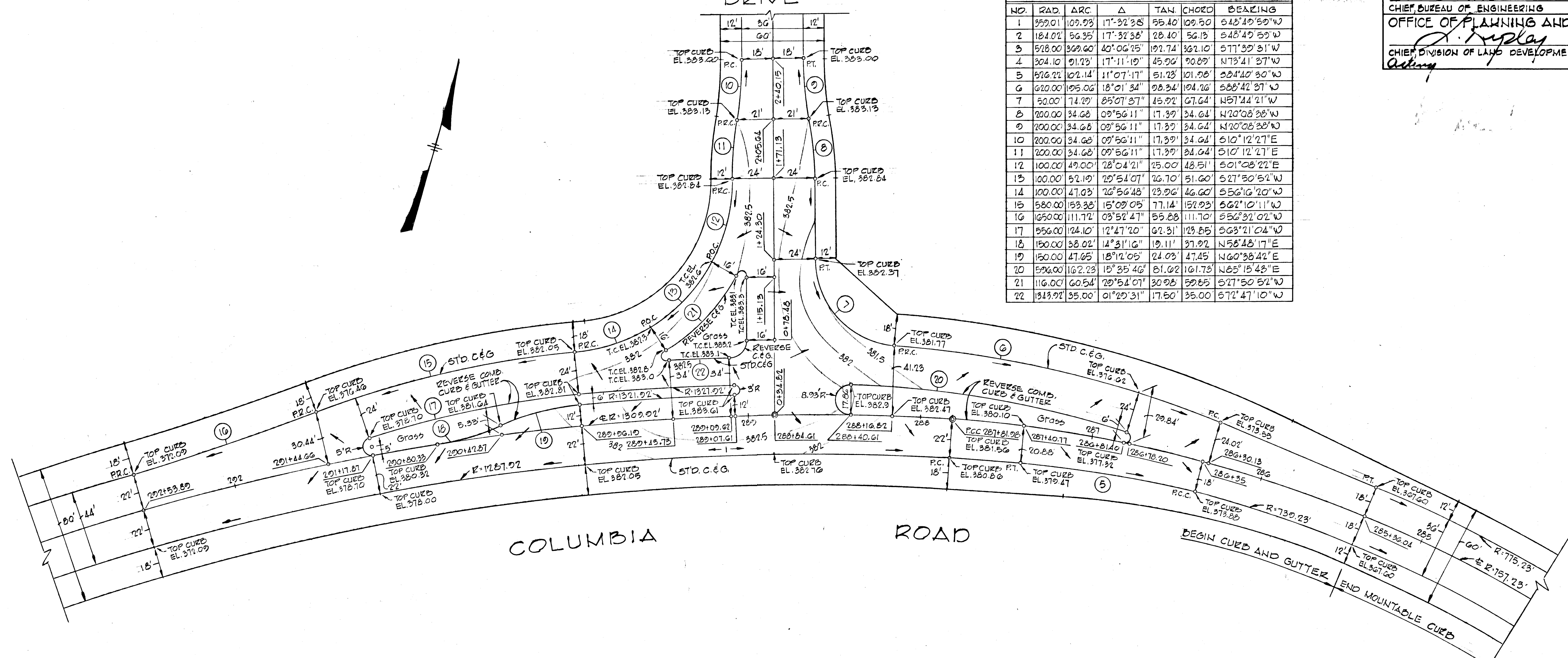
DATE: _____ BY: _____

DATE: _____ BY: _____

GRAY ROCK DRIVE

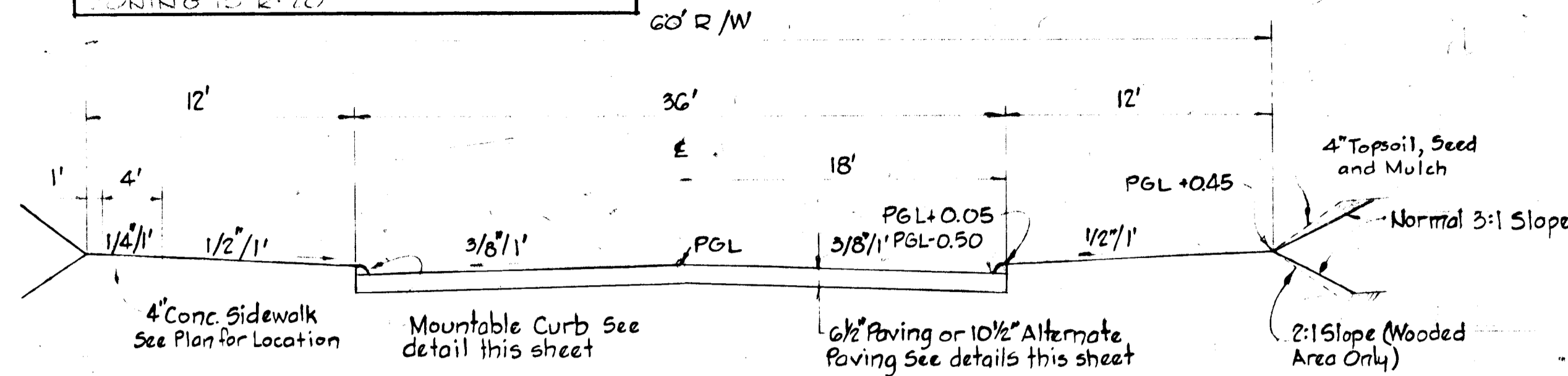
CURVE DATA						
NO.	RAD.	ARC	Δ	TAN	CHORD	BEARING
1	352.01	107.93	17°32'38"	55.40	109.50	S42°40'59"W
2	184.02	56.35	17°32'38"	28.40	56.13	S42°40'59"W
3	528.00	309.60	40°06'25"	192.74	362.10	S77°39'31"W
4	304.10	91.23	17°11'10"	45.92	90.89	N73°41'37"W
5	528.00	102.14	11°07'17"	51.23	101.98	S24°40'30"W
6	620.00	195.06	18°01'34"	98.34	194.26	S68°42'37"W
7	50.00	74.29	85°07'37"	45.92	67.64	N57°44'21"W
8	200.00	34.68	09°56'11"	17.39	34.64	N20°08'38"W
9	200.00	34.68	09°56'11"	17.39	34.64	N20°08'38"W
10	200.00	34.68	09°56'11"	17.39	34.64	S10°12'27"E
11	200.00	34.68	09°56'11"	17.39	34.64	S10°12'27"E
12	100.00	49.00	28°04'21"	25.00	48.51	S01°08'22"E
13	100.00	52.19	29°54'07"	26.70	51.60	S27°50'52"W
14	100.00	47.03	28°56'48"	23.96	46.60	S56°16'20"W
15	580.00	153.38	15°09'05"	77.14	152.93	S62°10'11"W
16	650.00	111.72	09°52'47"	55.88	111.70	S56°32'02"W
17	556.00	124.10	12°47'20"	62.31	123.85	S63°21'04"W
18	150.00	38.02	14°31'16"	19.11	37.92	N58°48'17"E
19	150.00	47.65	18°12'05"	24.03	47.45	N60°38'42"E
20	526.00	162.23	15°35'46"	81.02	161.73	N85°15'43"E
21	116.00	60.54	29°54'07"	30.92	59.85	S27°50'52"W
22	1313.92	35.00	01°29'31"	17.50	35.00	S72°47'10"W

DEPARTMENT OF PUBLIC WORKS
W. O. Falat 8-13-79
 CHIEF, BUREAU OF ENGINEERING DATE
 OFFICE OF PLANNING AND ZONING
D. H. Taylor 8/3/79
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE
A. King



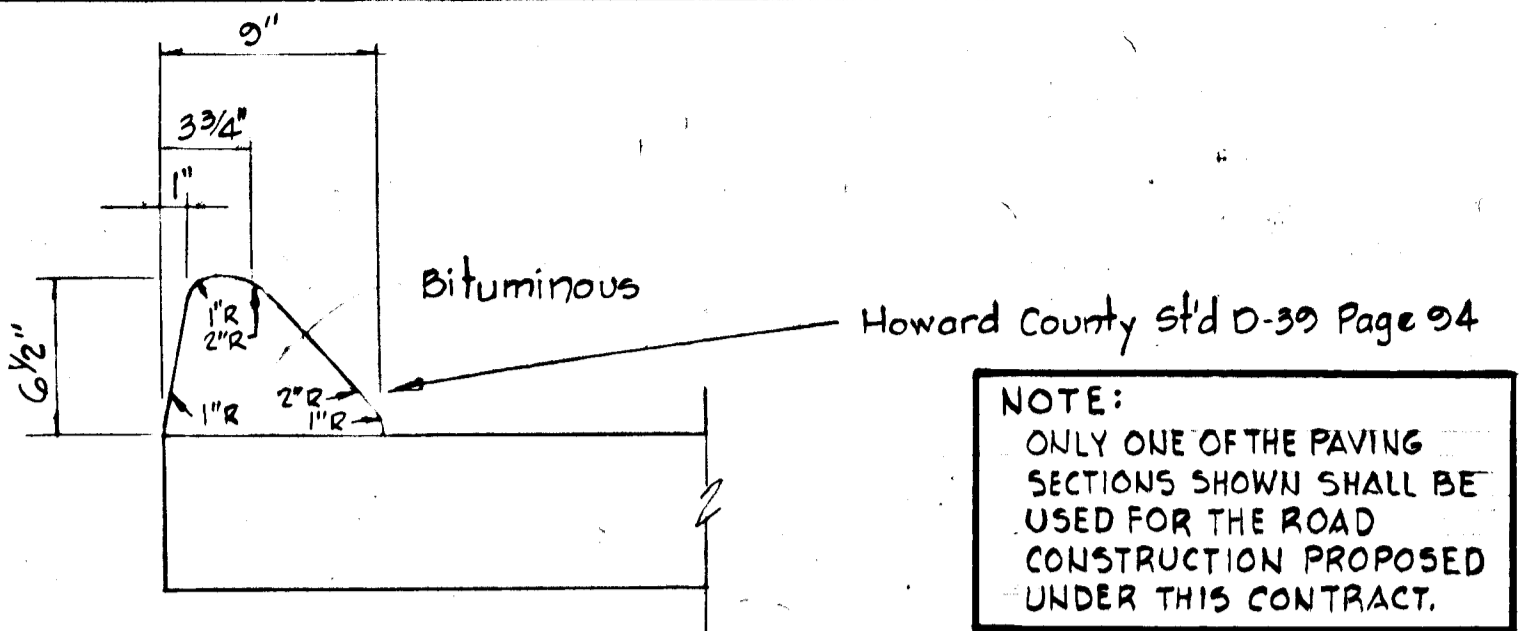
DORSEY HALL
 2ND ELECTION DISTRICT
 HOWARD COUNTY, MARYLAND
 OWNER AND DEVELOPER
 HOWARD RESEARCH AND DEVELOPMENT CORP.
 PROJECT AREA
 SECTION I AREA I
 PROJECT TITLE
 ROAD STAKEOUT PLAN
 COLUMBIA ROAD & GRAY ROCK DRIVE INTERSECTION
 SCALE: 1" = 30' Date:
 WHITMAN, REQUARDT & ASSOCIATES
 ENGINEERS
 BALTIMORE, MARYLAND 21202
Kenneth A. McCord
 KENNETH A. MCCORD
 Registered Engineer
 No. 1074

COLUMBIA ROAD STA. 256+21.90 TO STA. 295+03.64
 FINISHING TO 2+0

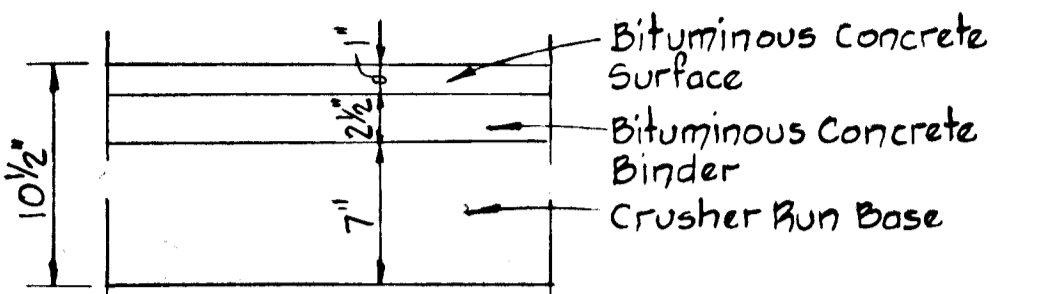


S.H.A. PAVING SECTION
 No Scale

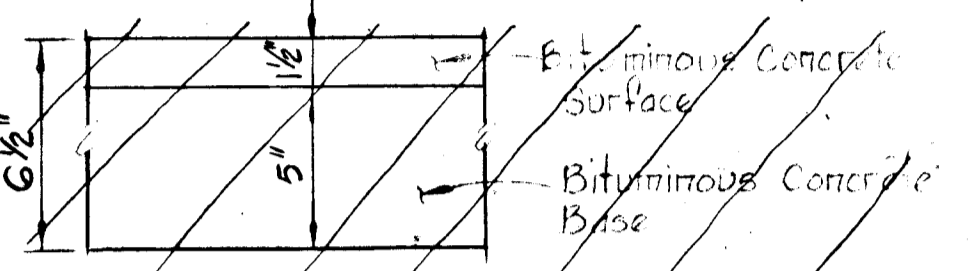
MOUNTABLE CURB SECTION
 No Scale



NOTE:
 ONLY ONE OF THE PAVING SECTIONS SHOWN SHALL BE USED FOR THE ROAD CONSTRUCTION PROPOSED UNDER THIS CONTRACT.



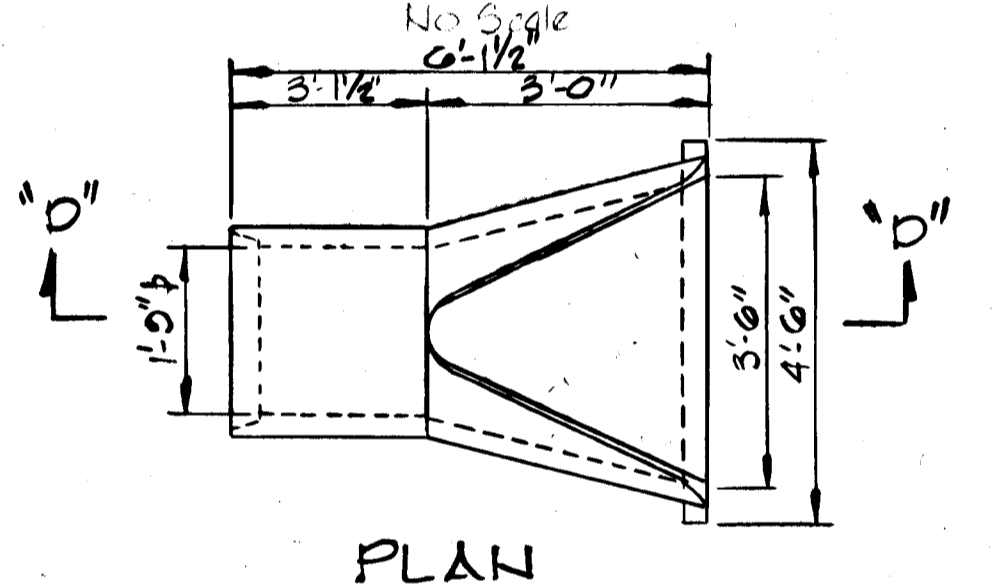
ALTERNATE SECTION



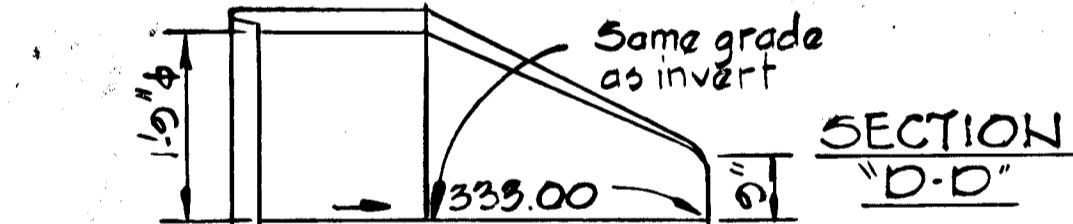
STANDARD SECTION

- NOTES:
 1. Base will be primed in accordance with C-30-C as provided in the Howard County Road Construction Code and Standard Specifications.
 2. Tack Coat is required in accordance with Section C-31-4 of the Howard County Road Construction Code and Standard Specifications.

HOWARD COUNTY TYPICAL PAVING SECTION



PLAN

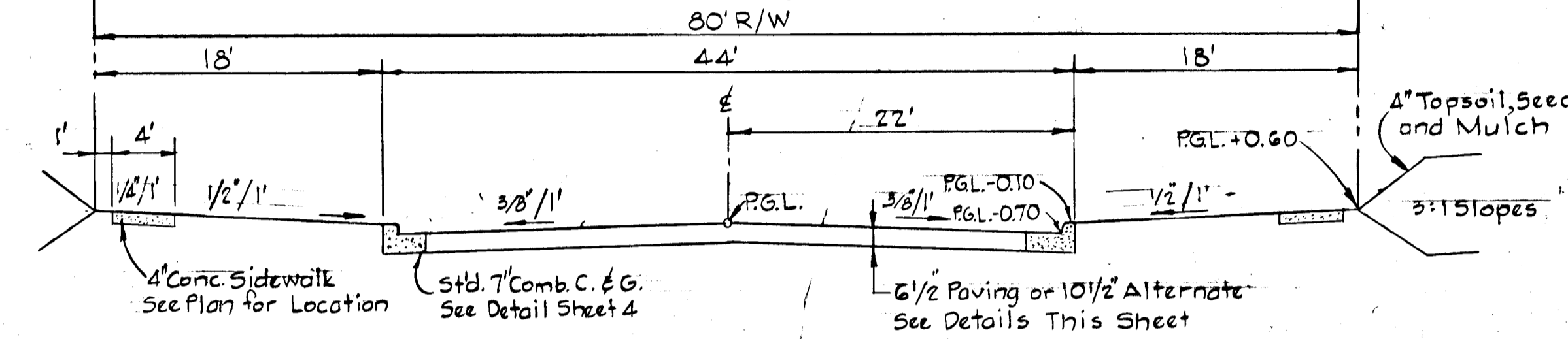


SECTION 'D-D'

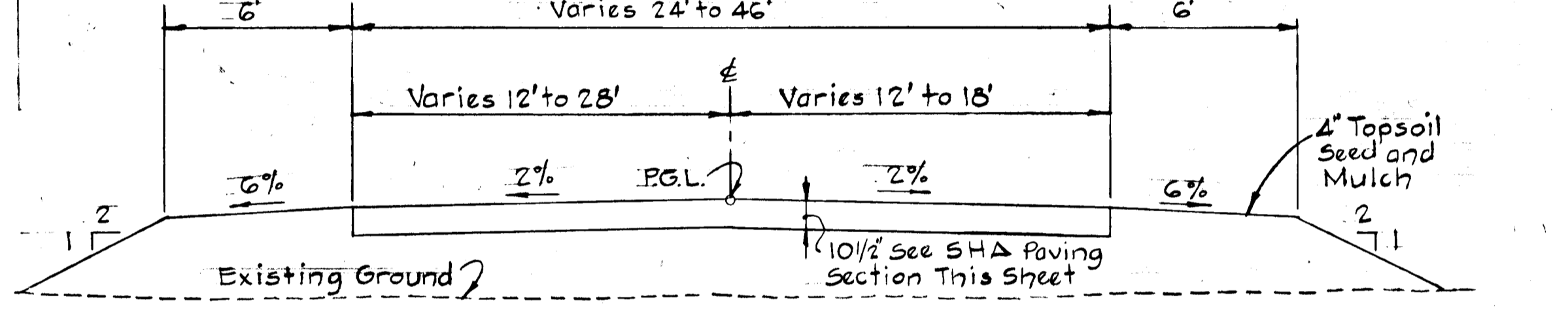
21" CONCRETE END SECTION - S-6
 No Scale

Rev. Date	Rev. No.	Revision Description
DORSEY HALL 2 ND ELECTION DISTRICT HOWARD COUNTY MARYLAND		
OWNER AND DEVELOPER HOWARD RESEARCH AND DEVELOPMENT CORP.		
PROJECT AREA SECTION I AREA I		
PROJECT TITLE STORM DRAIN PROFILES AND ROADWAY DETAILS		
SCALE: AS SHOWN		DATE
WHITMAN, REQUARDT & ASSOCIATES ENGINEERS BALTIMORE, MARYLAND 21202		
<i>Kenneth P. McLeod</i> Registered Engineer No. 1974		

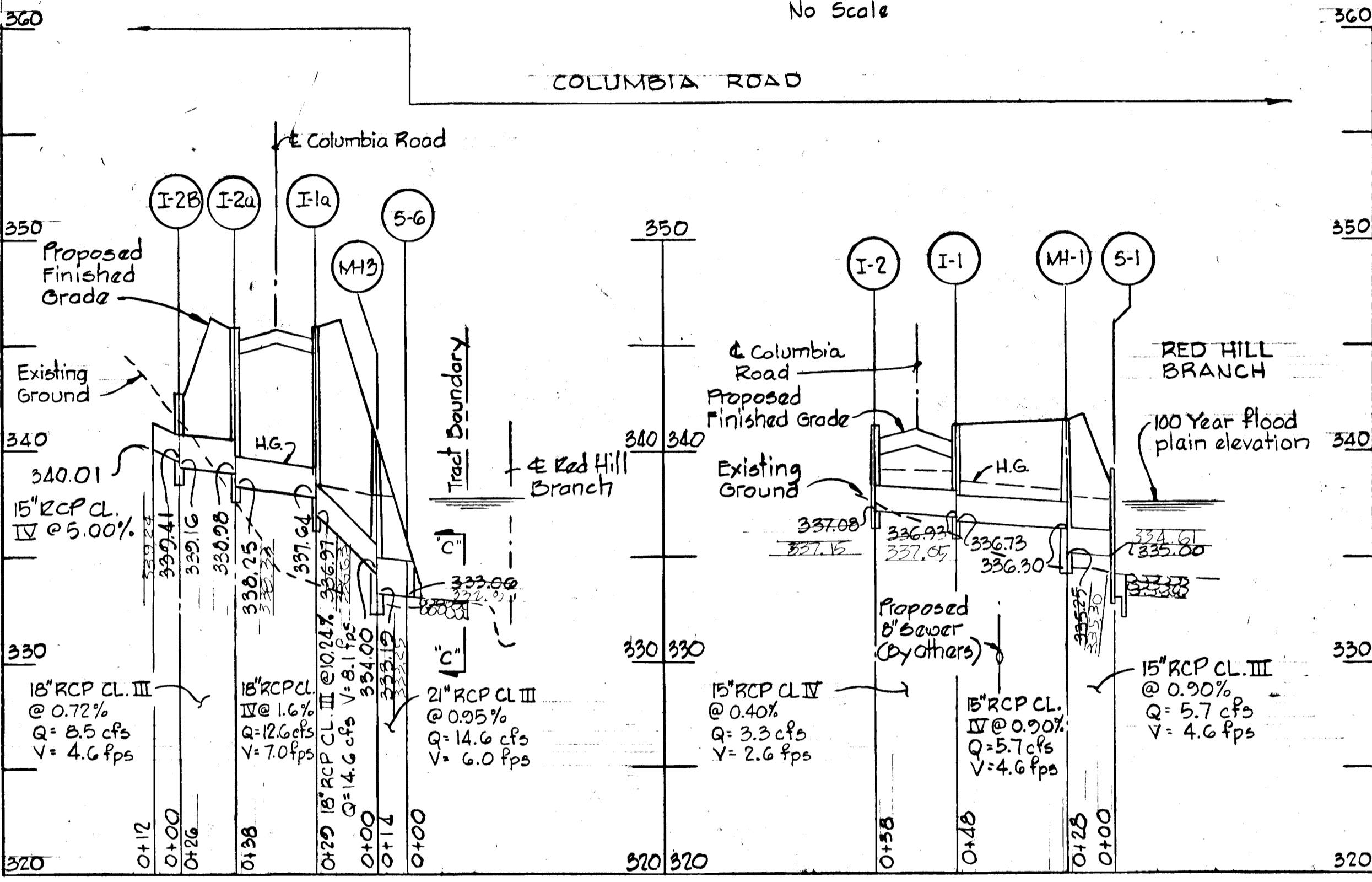
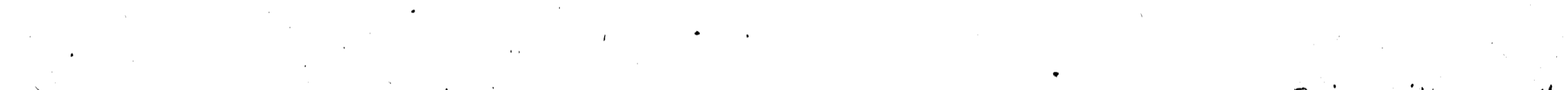
COLUMBIA ROAD - STA. 262+50 TO STA. 285+50±
 No Scale
 80' R/W



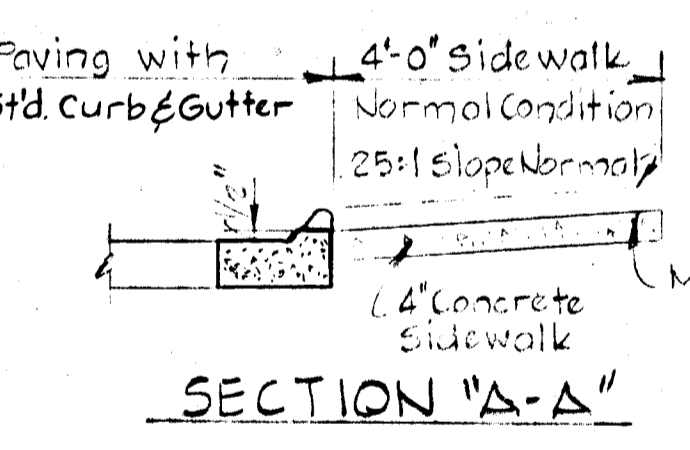
COLUMBIA ROAD - STA. 292+25± TO STA. 295+03.64
 No Scale



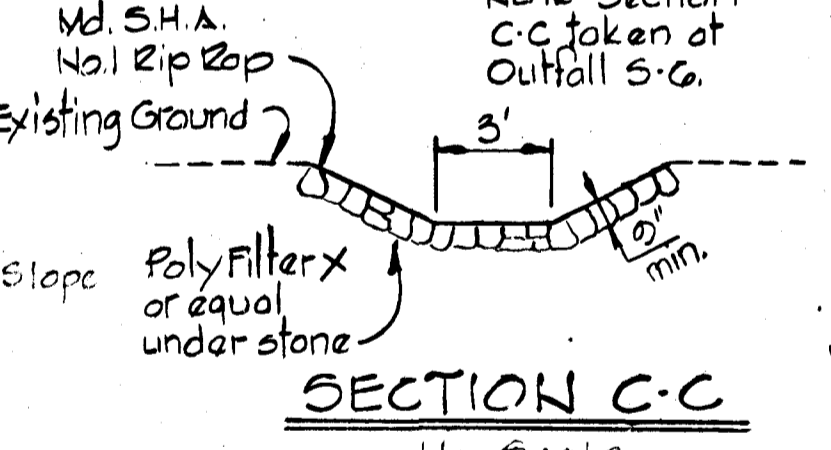
COLUMBIA ROAD - STA. 256+21.90 TO STA. 257+75
 No Scale



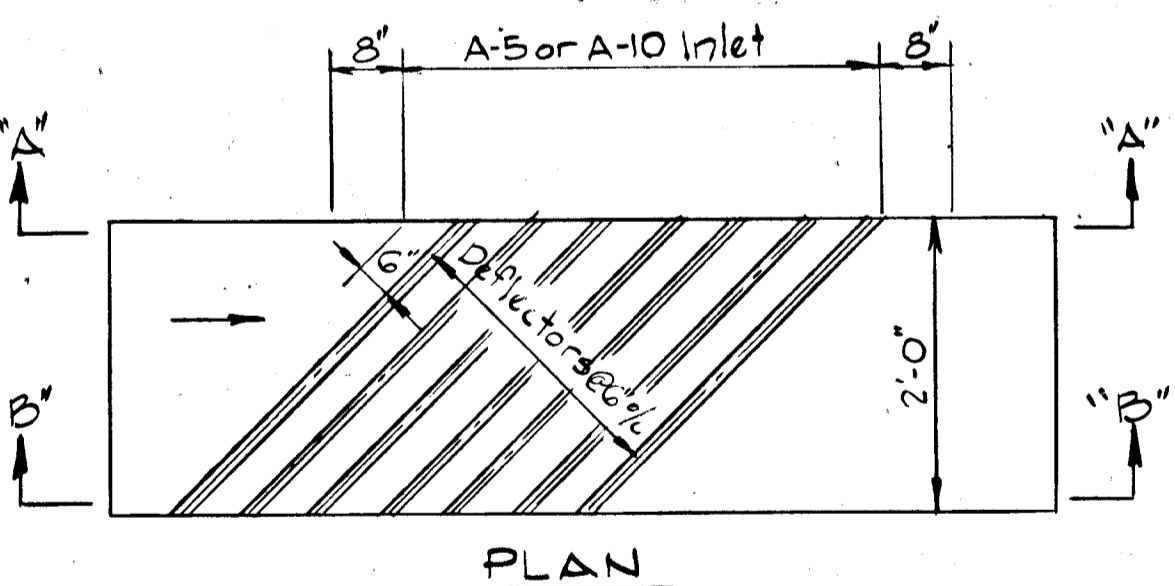
PROFILE
 Hor. 1" = 30'
 Scale: Vert. 1" = 5'



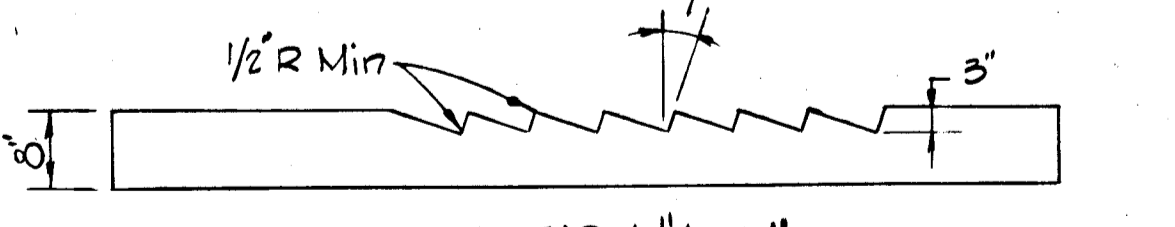
SECTION 'A-A'



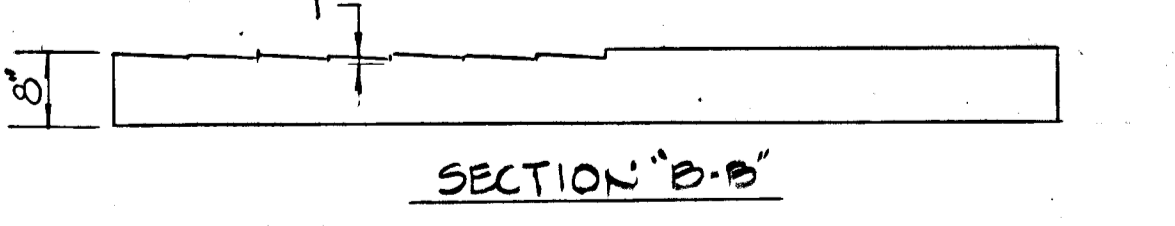
SECTION 'C-C'



PLAN

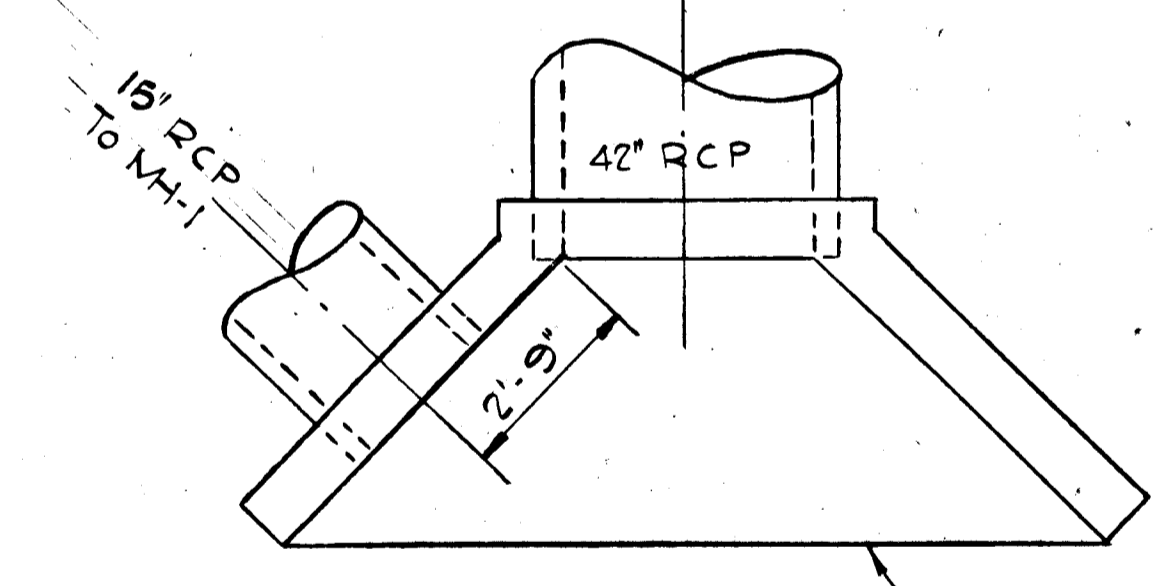


SECTION 'A-A'

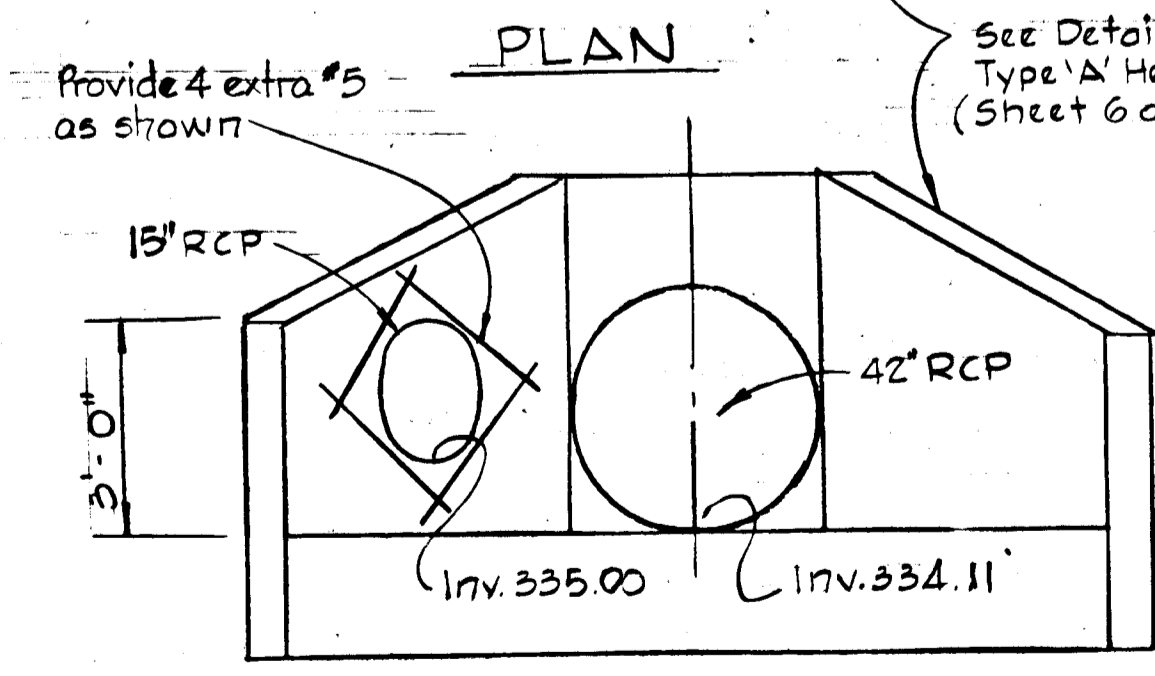


SECTION 'B-B'

DEFLECTOR DETAIL
 No Scale

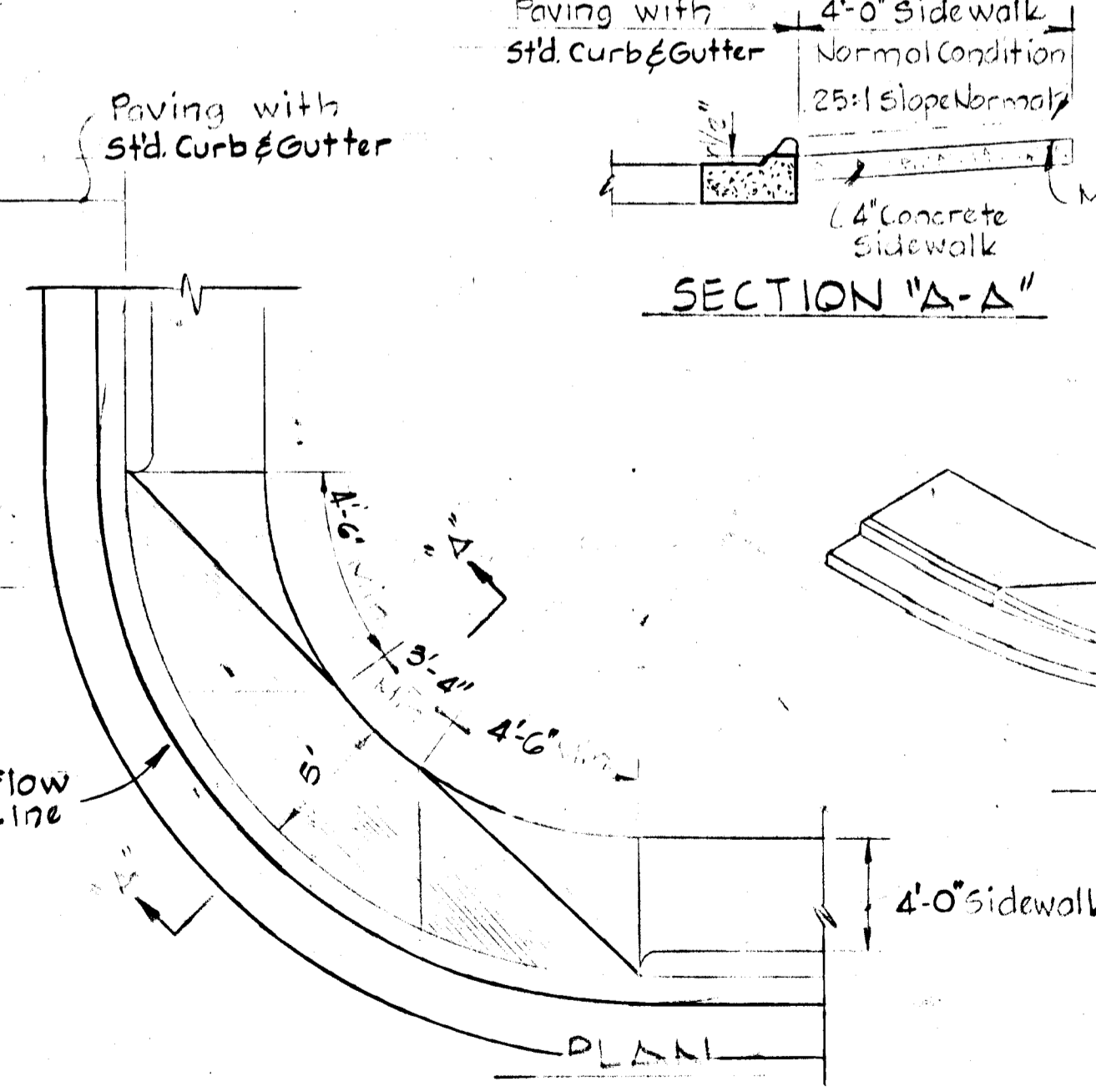


PLAN

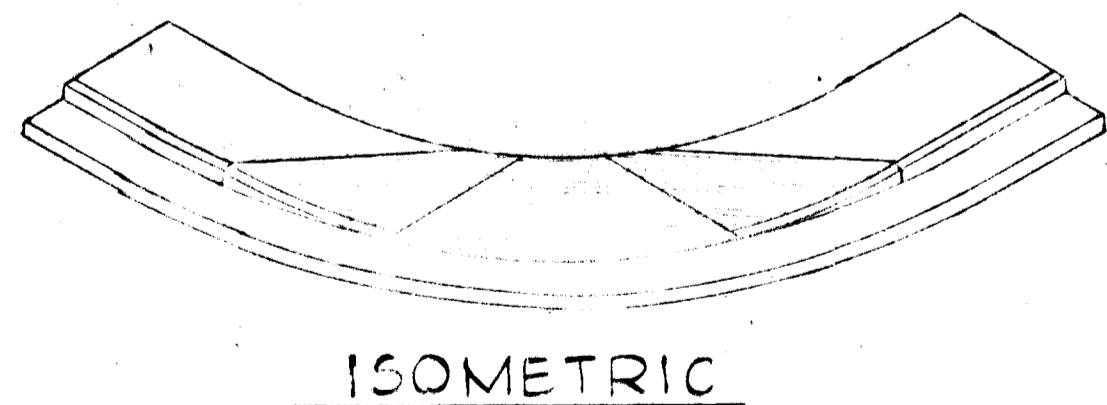


ELEVATION

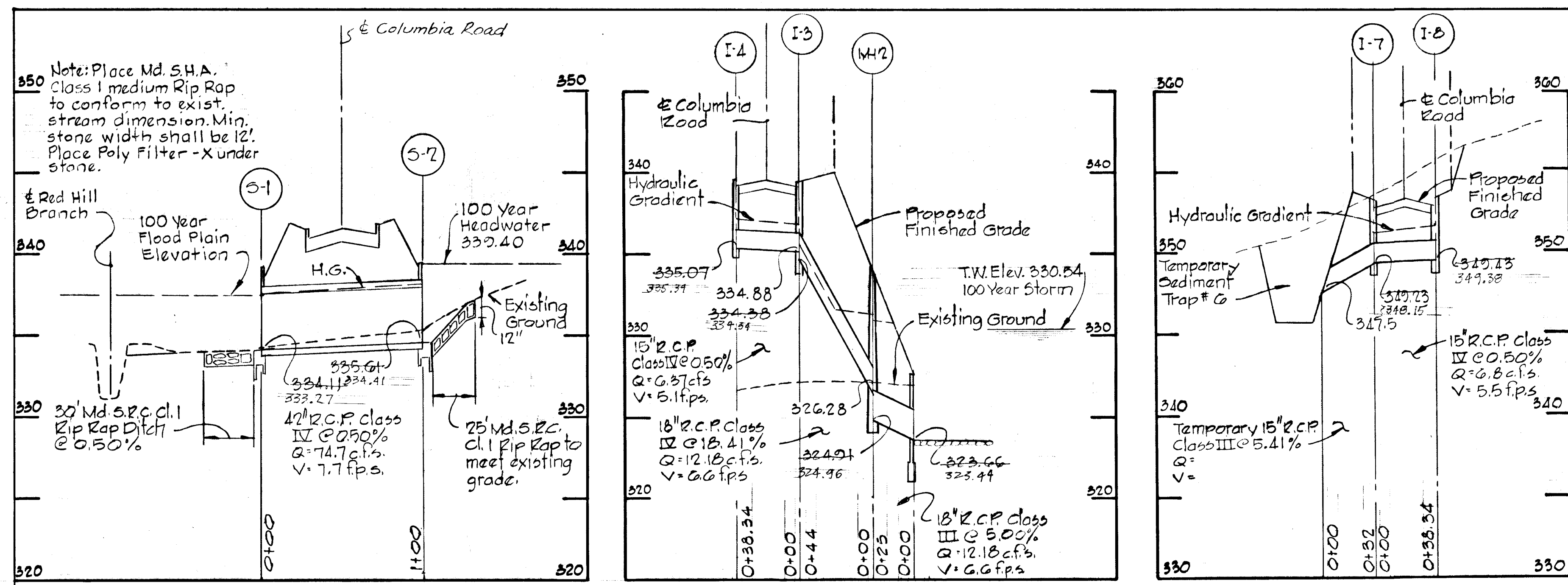
DETAIL - 15" RCP @ HEADWALL S-1
 No Scale



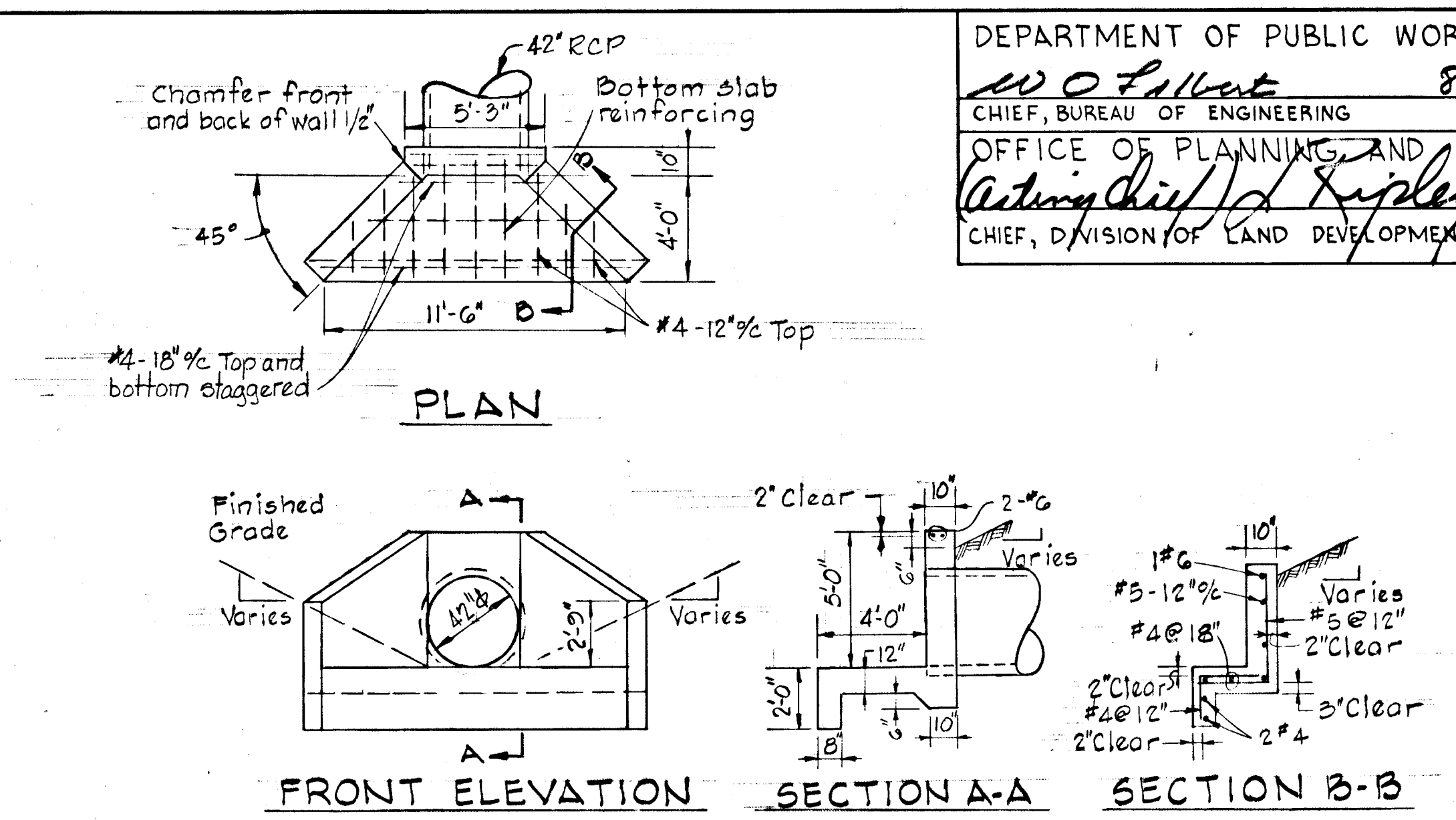
DETAIL SIDEWALK RAMP
 No Scale



ISOMETRIC



PROFILES
 Scale: Hor. 1" = 50'
 Ver. 1" = 5'



NOTES:
 1. Exposed edges shall be chamfered 1"x1".
 2. All concrete shall be 3000 psi.

DETAIL - TYPE "A" HEADWALL - S-1
 No Scale

CULVERT SPECIFICATIONS

EARTHWORK

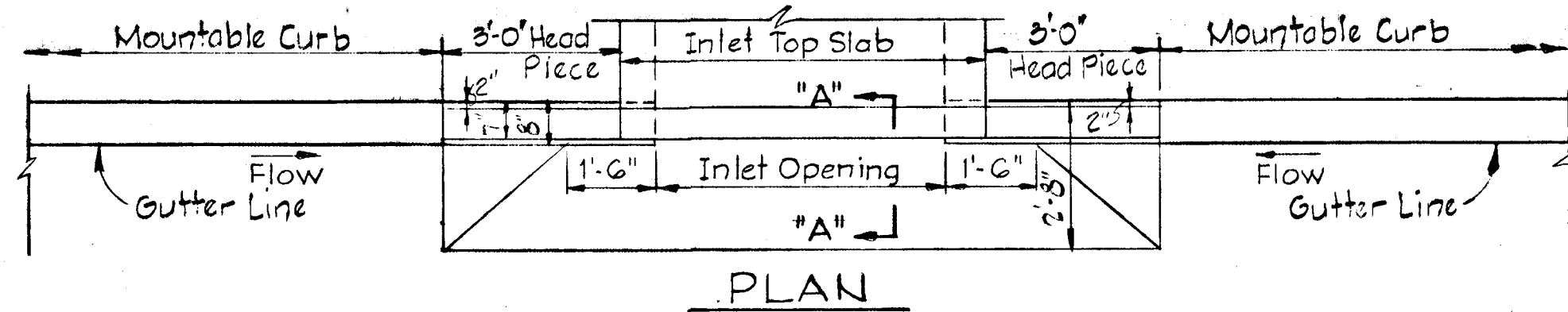
- The Contractor shall excavate the foundation area under the proposed pipe arches to the minimum limits indicated in Sections BB and CC as shown on the culvert drawings. Actual limits of excavation to firm undisturbed soil or decomposed rock shall be determined by the engineer in the field. No backfill material may be placed in the foundation excavation until directed by the engineer.
- Maryland CP-1 bank run gravel shall be placed in the foundation excavation in loose layers. Each layer shall be 8-inches maximum thickness before compaction. Each layer shall be placed continuous over the entire length of the fill and compacted to 95% of ASSHTO T-180 Method 'D'. The bank run gravel shall be placed to an elevation of 3-feet above the culvert invert.
- Compaction of the bank run gravel shall be done by acceptable vibratory equipment. The compaction of each layer shall be continuous over the entire fill. The vibratory equipment shall make sufficient coverages to insure that the required density has been reached. The pipe arches shall be firmly and uniformly bedded throughout their entire lengths.
- Select material such as A-1, A-2-4 or A-2-5 (ASSHTO M-145) shall be used as backfill around the pipe arches to the limits indicated in Sections BB and CC on the Culvert drawings. The backfill material shall be placed in horizontal loose layers not to exceed 8-inches in thickness and compacted by hand vibratory compactors. The 8-inch layers shall be compacted to 95% of ASSHTO T-180 Method 'D'.
- At no time during the backfill operation shall construction equipment be allowed to operate closer than four feet to any part of the pipe arches. Under no circumstances shall the contractor drive construction equipment over the pipe arch unless there is a compacted fill to a depth of 24-inches or greater over the top of the pipe arch.

STRUCTURAL PLATE PIPE ARCH

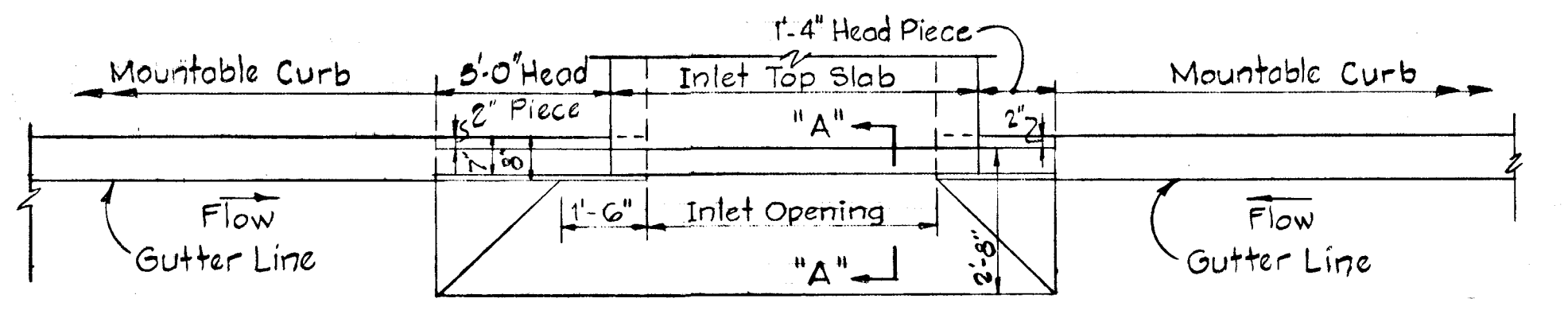
The manufacture, metal composition, zinc coating, fabrication, installation, accessories, inspection and certification of the structural plate materials required for the construction of culverts no. 1, no. 2 and no. 3 shall conform to the specifications as outlined in ASSHTO M 167.

REINFORCED CONCRETE

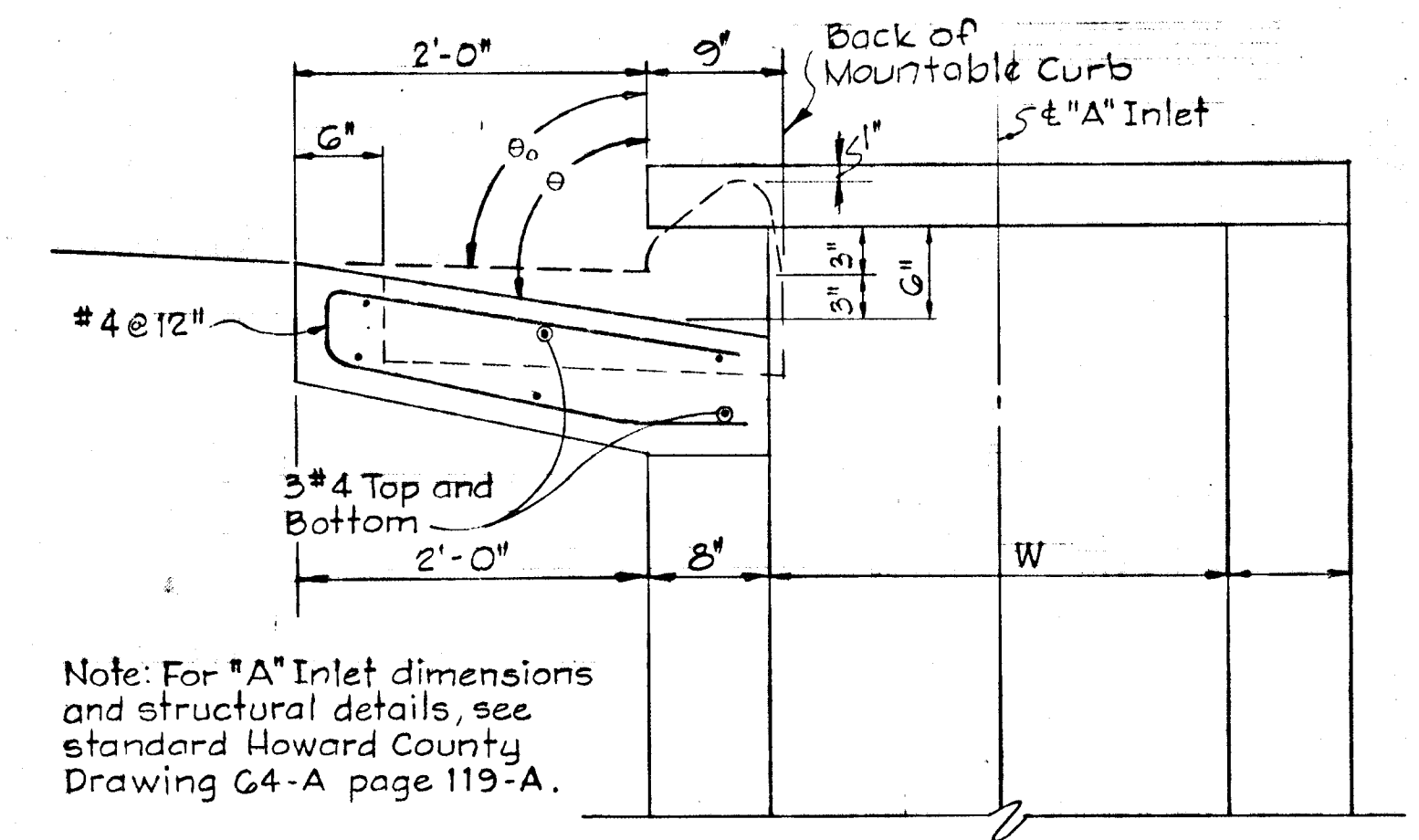
See bond contract specifications and culvert drawings.



SECTION ALONG FLOW LINE
 SUMPED "A" INLETS - MOUNTABLE CURB



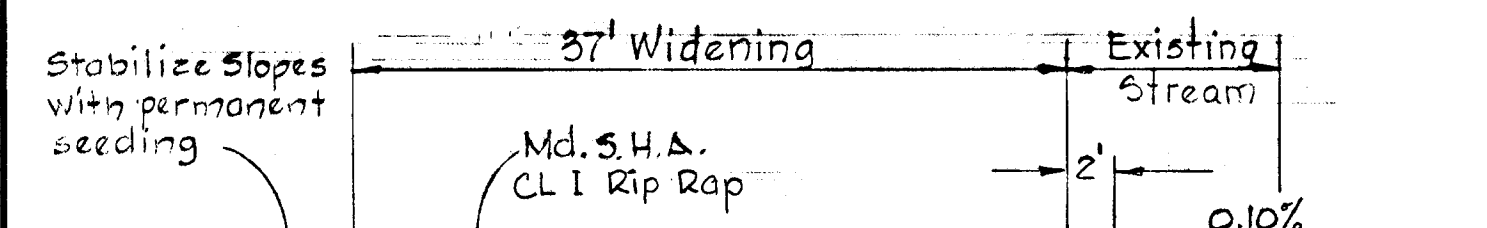
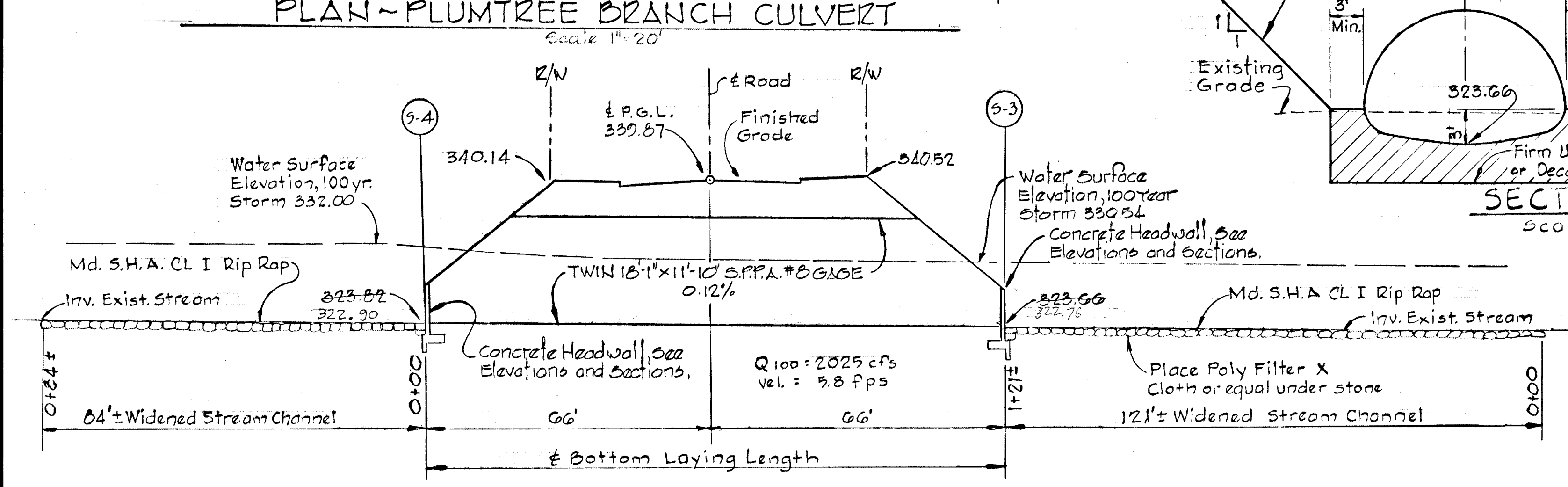
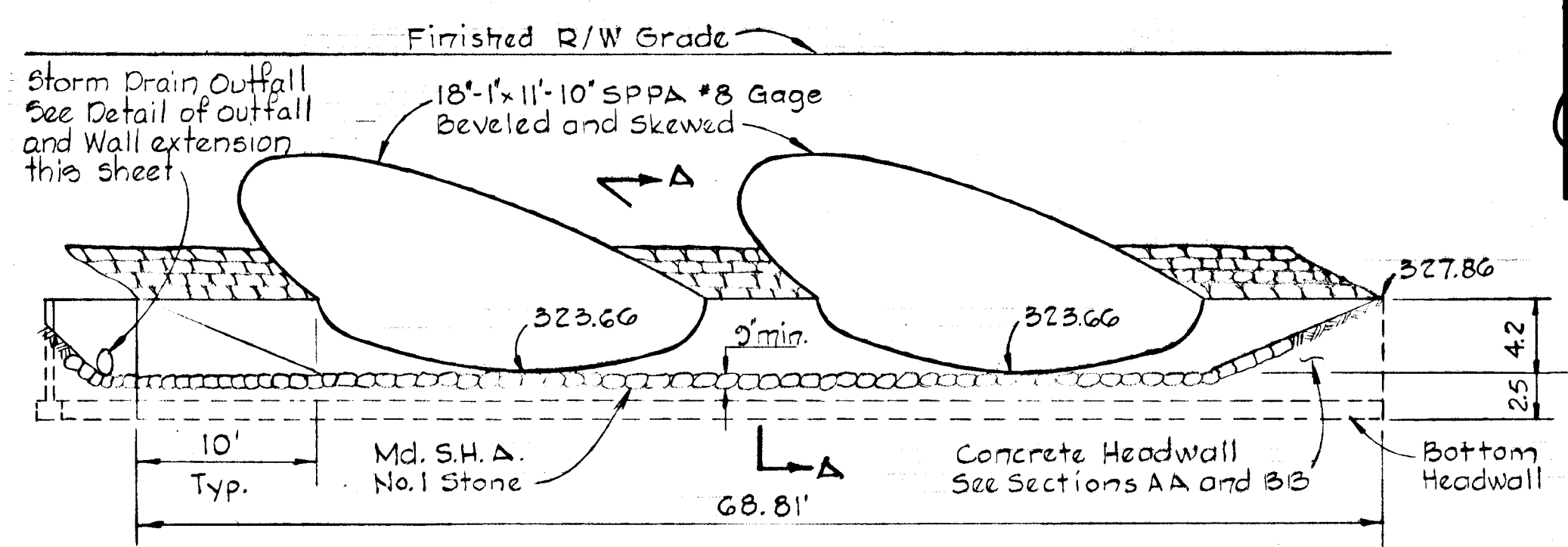
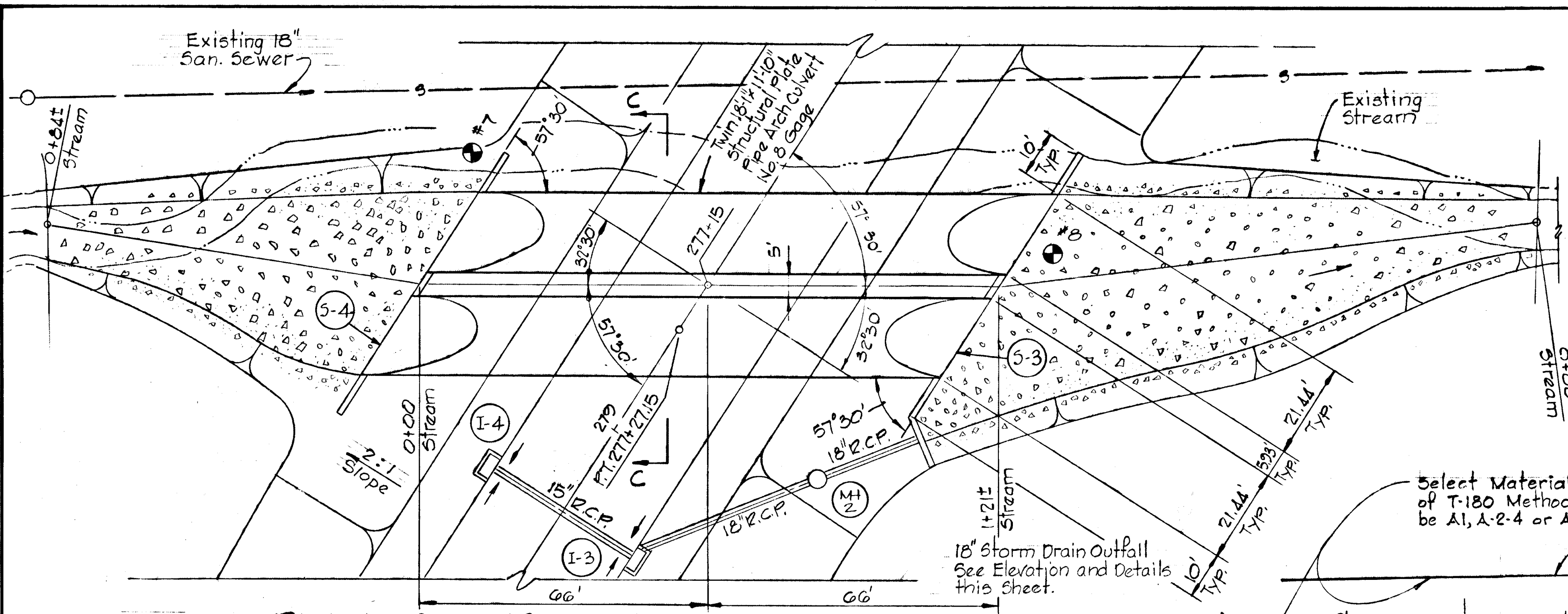
SECTION ALONG FLOW LINE
 "A" INLETS - MOUNTABLE CURB



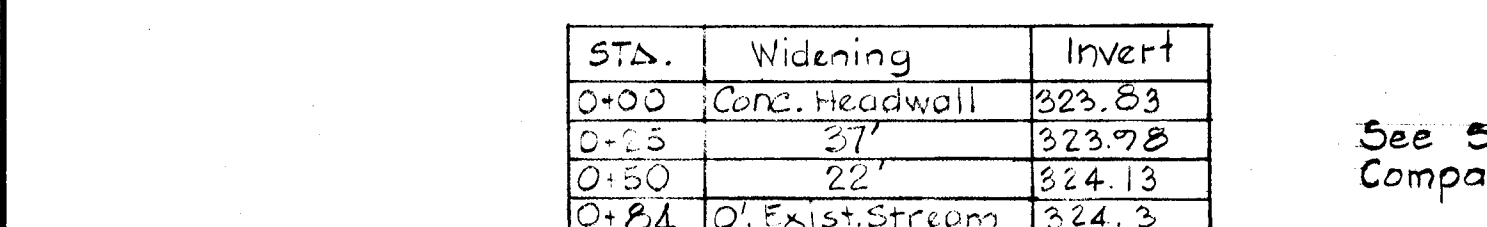
SECTION "A-A"
 "A" INLET - MOUNTABLE CURB

Rev. Date	Rev. No.	Revision Description
		DORSEY HALL 2ND ELECTION DISTRICT HOWARD COUNTY MARYLAND
		OWNER AND DEVELOPER HOWARD RESEARCH AND DEVELOPMENT CORP.
		PROJECT AREA SECTION 1 AREA 1
		PROJECT TITLE STORM DRAIN PROFILES AND CULVERT SPECIFICATIONS
		SCALE: AS SHOWN DATE
		WHITMAN, REQUARDT & ASSOCIATES ENGINEERS BALTIMORE, MARYLAND 21202
		Kenneth A. Mc Cord Registered Engineer No. 1974

AS Boltz 2/17/80
 P.C. 7-79-46

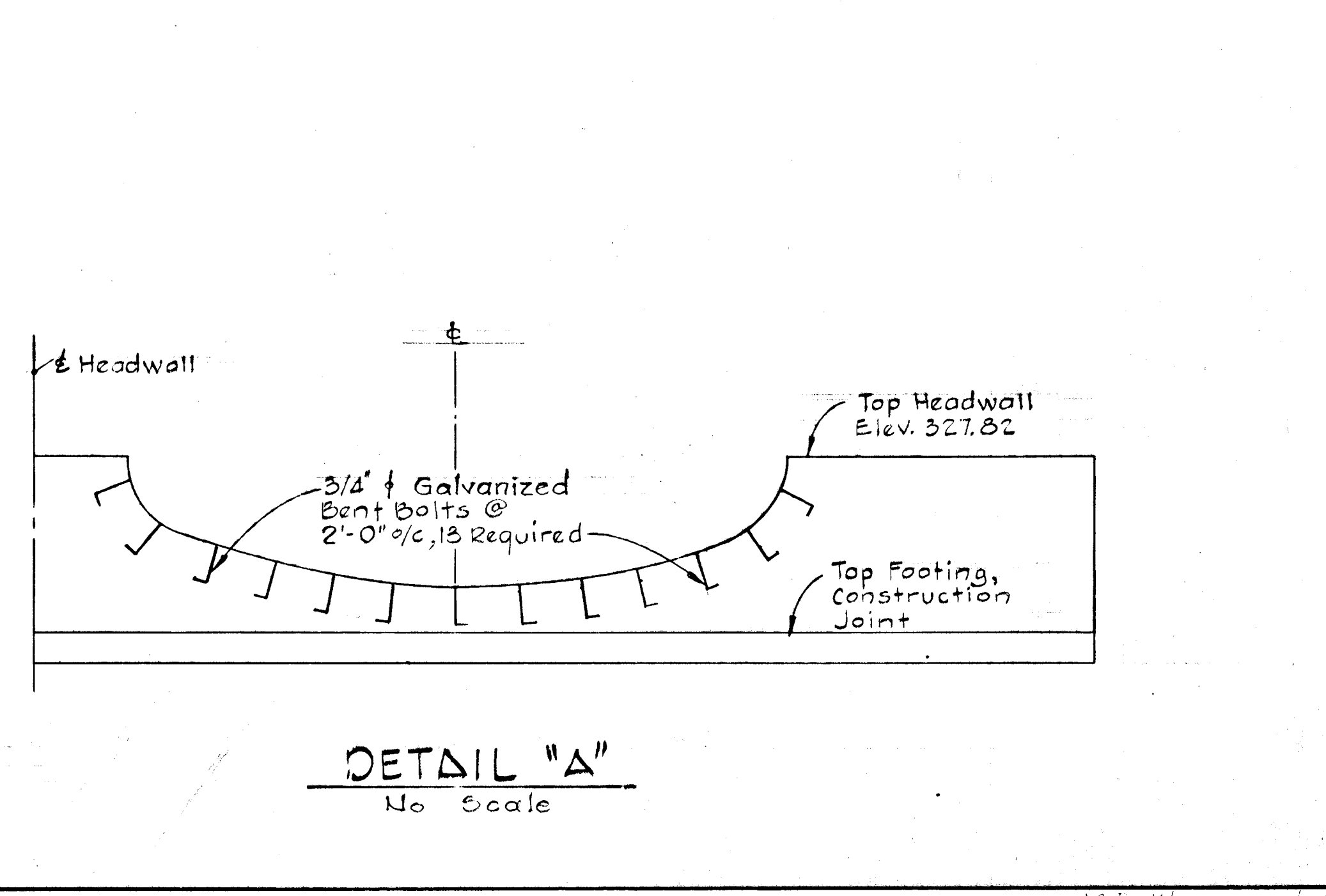
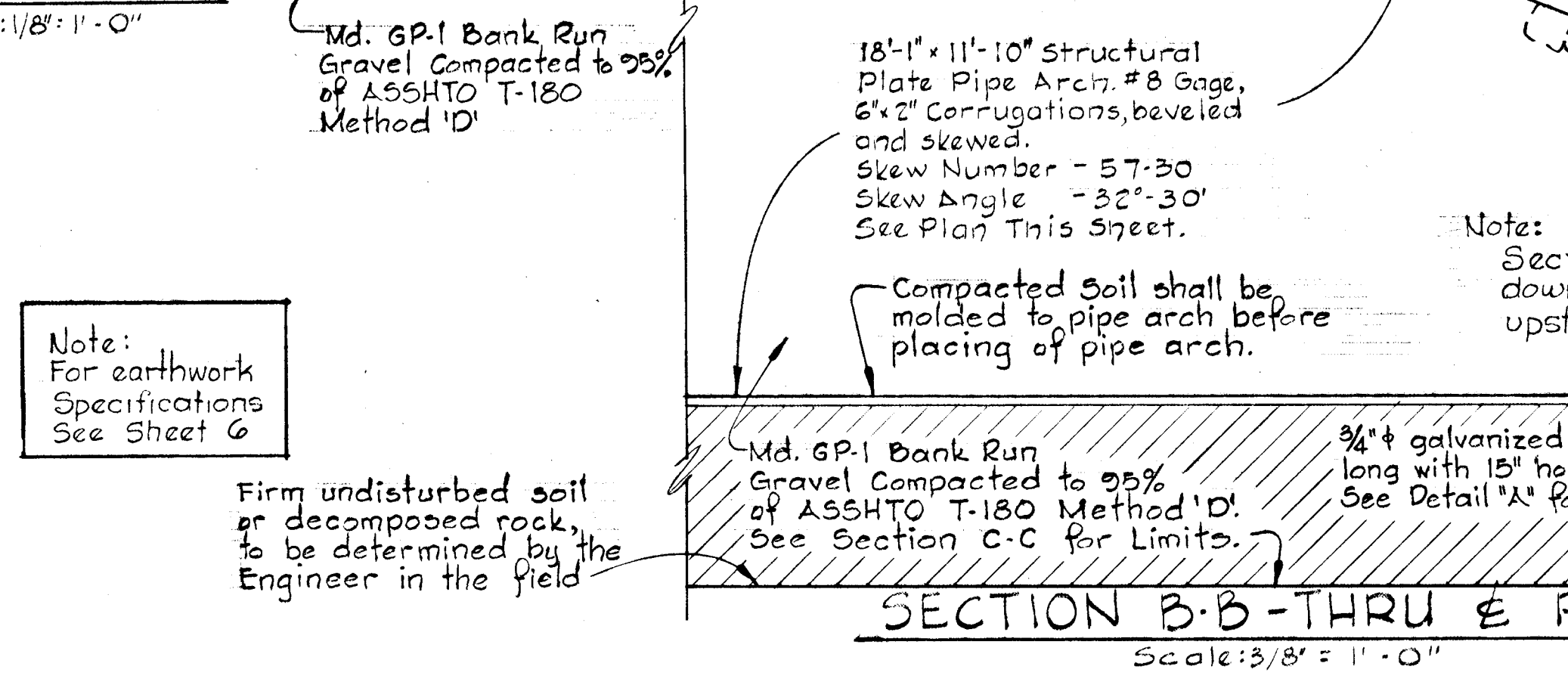
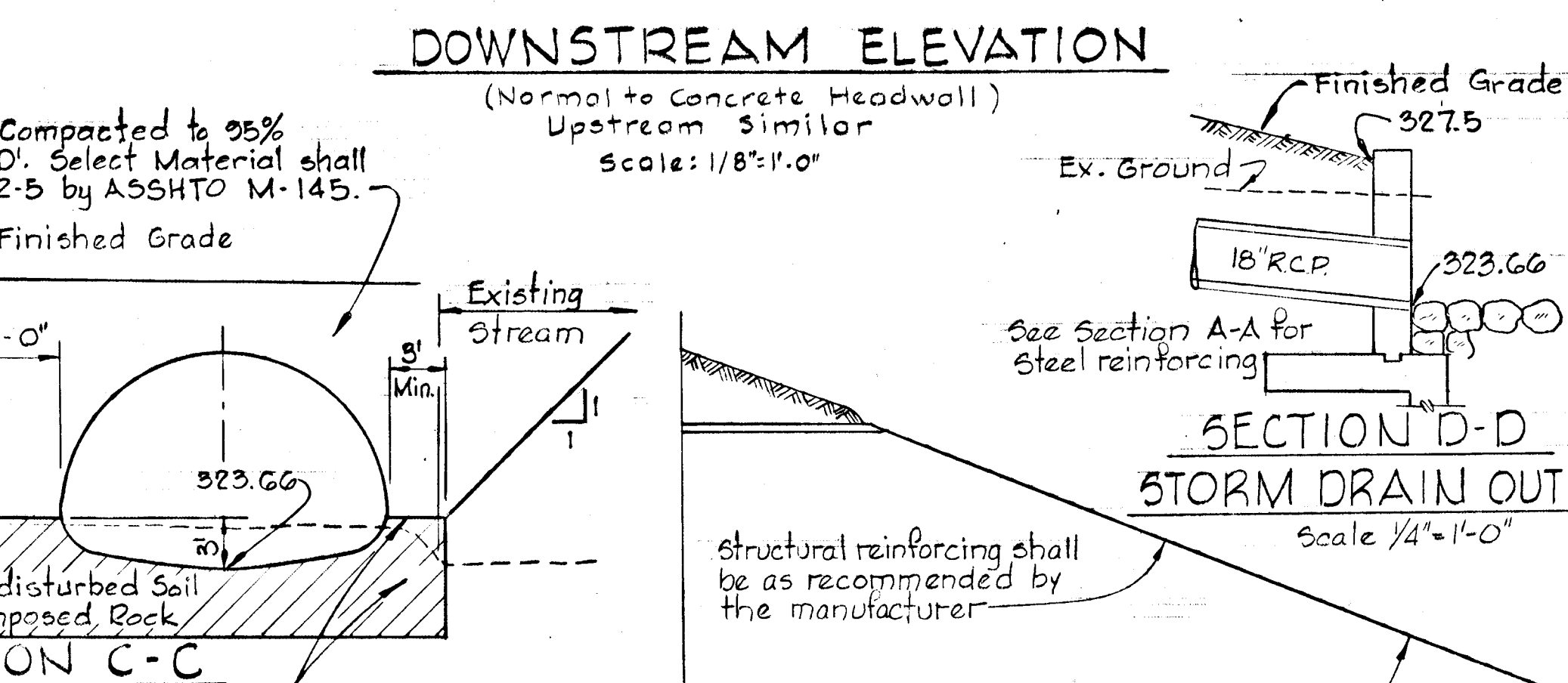
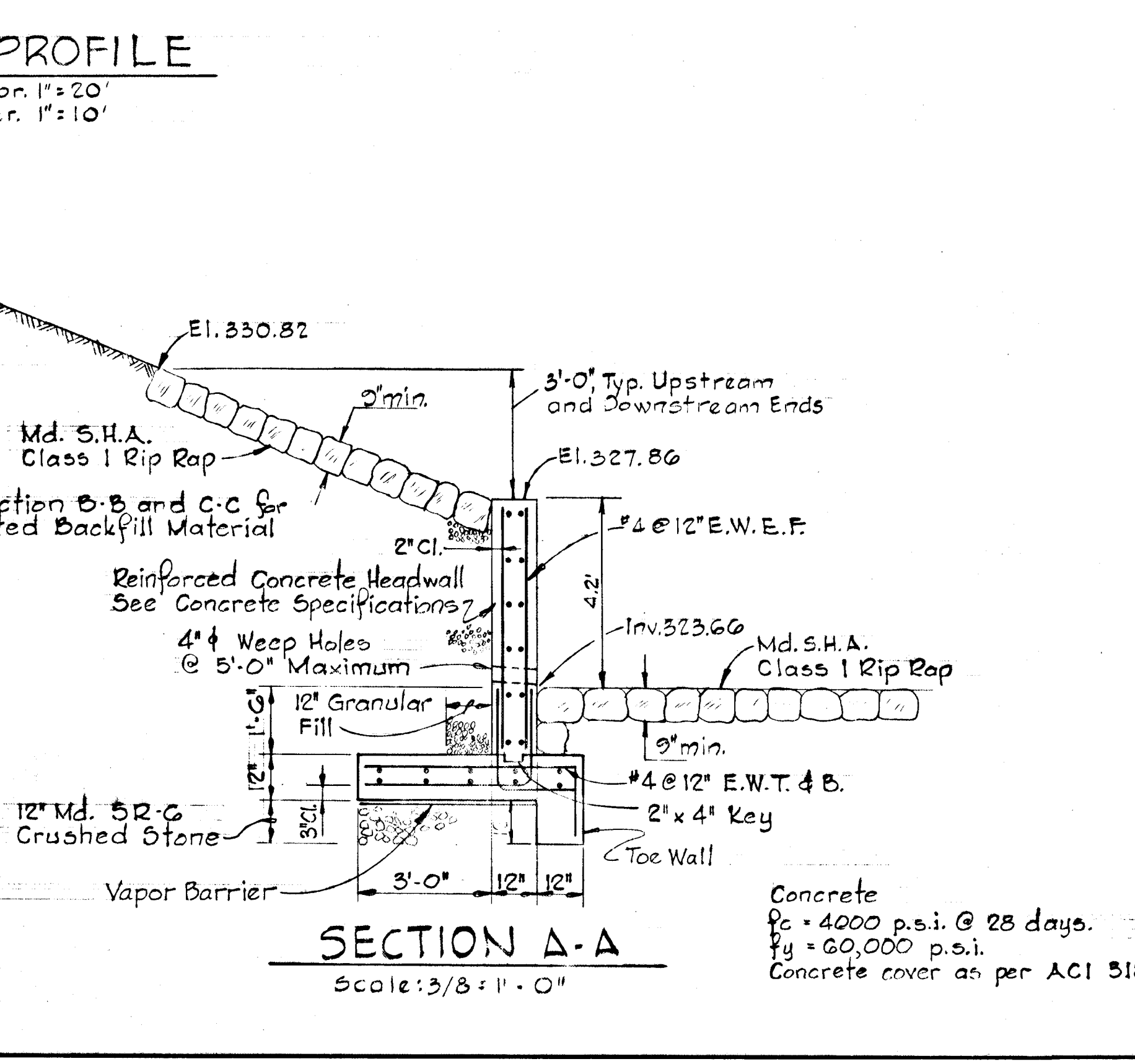


STA.	Widening	Invert
0+00	Conc. Headwall	323.83
0+25	27'	323.78
0+50	22'	324.13
0+84	0' Exist. Stream	324.3



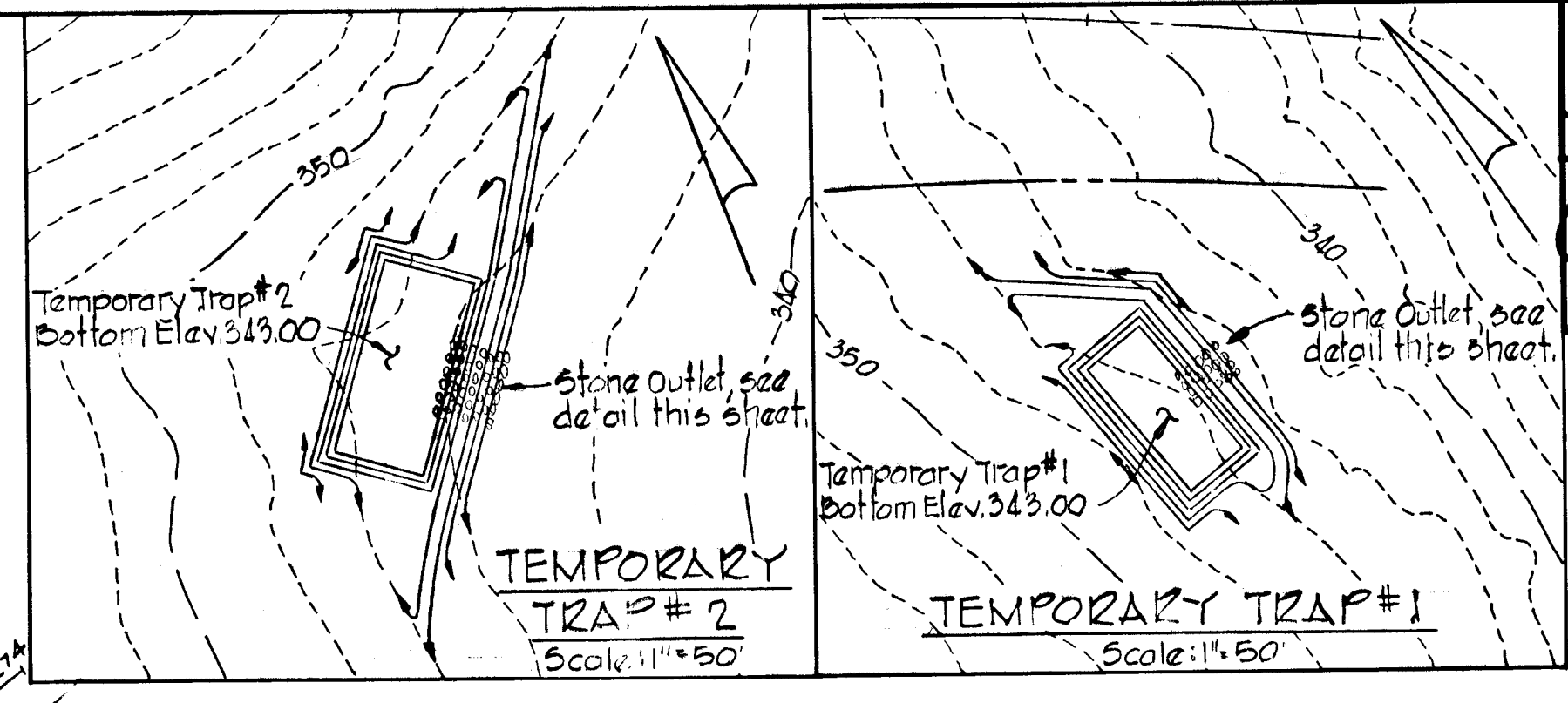
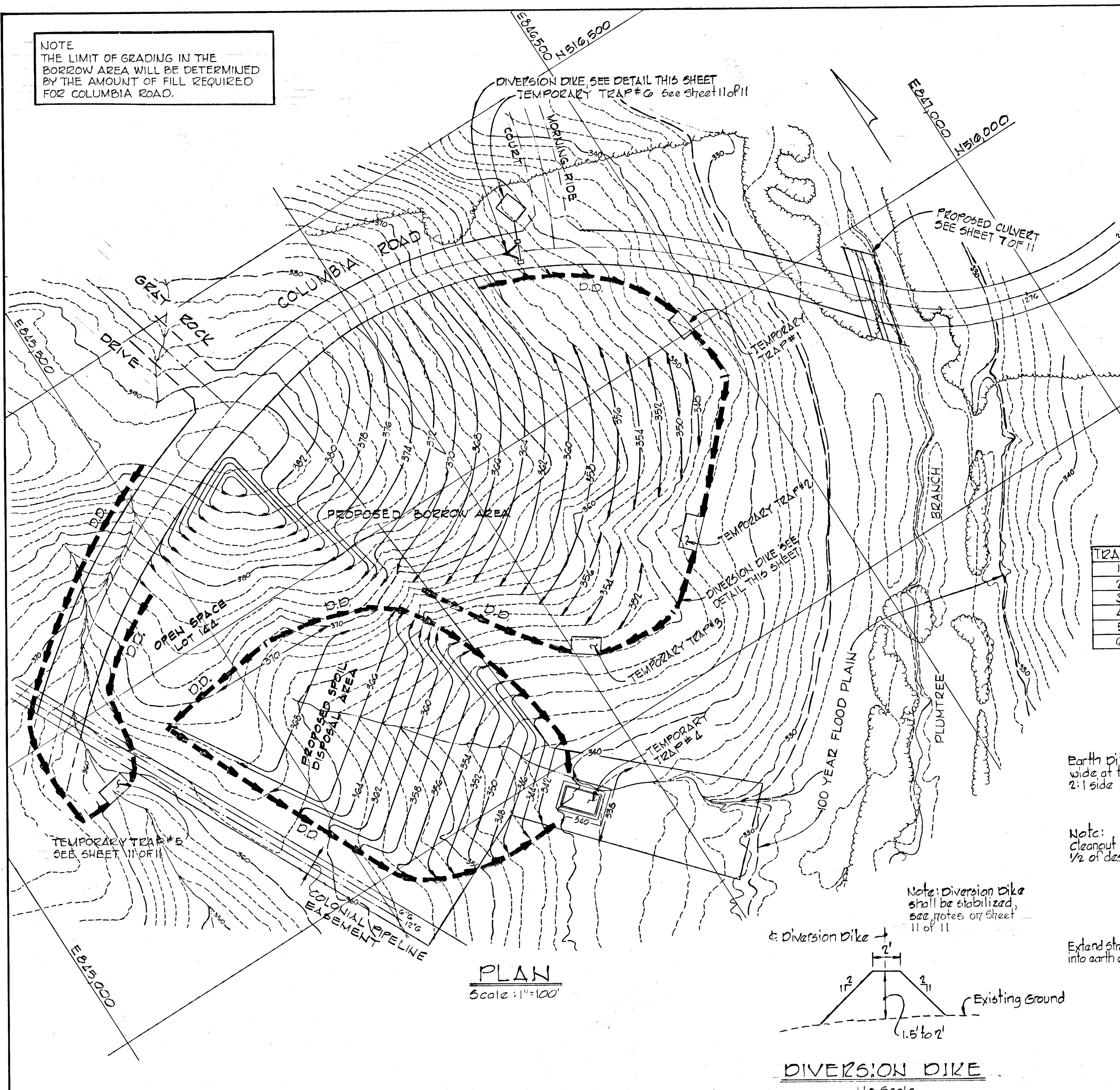
STA.	Widening	Invert
0+00	0' Exist. Stream	323.4
0+25	17'	323.46
0+50	28'	323.52
0+75	27'	323.57
1+00	43'	323.61
1+21	Conc. Headwall	323.66

* See Ditch of Storm Drain Outfall.

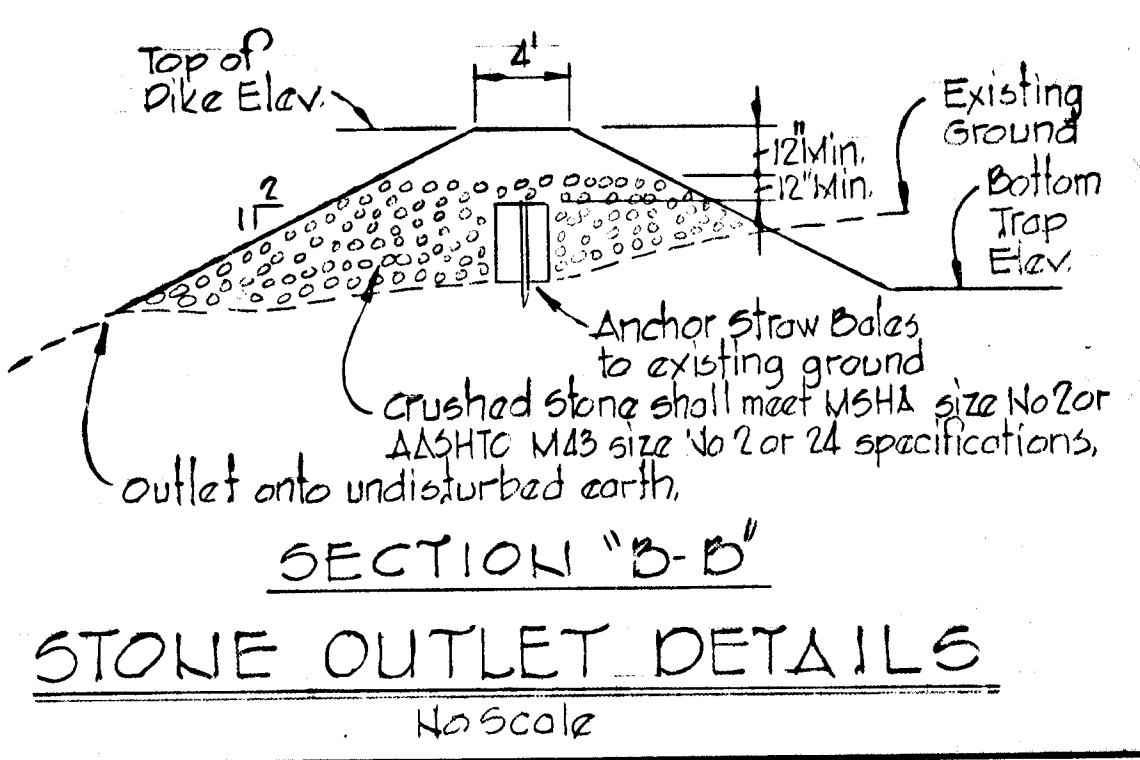
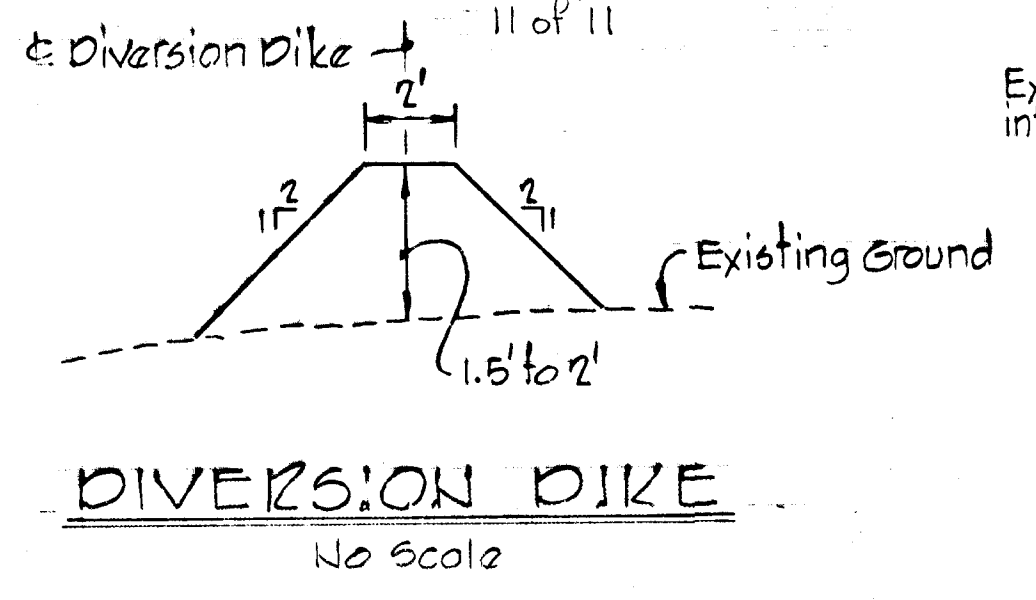
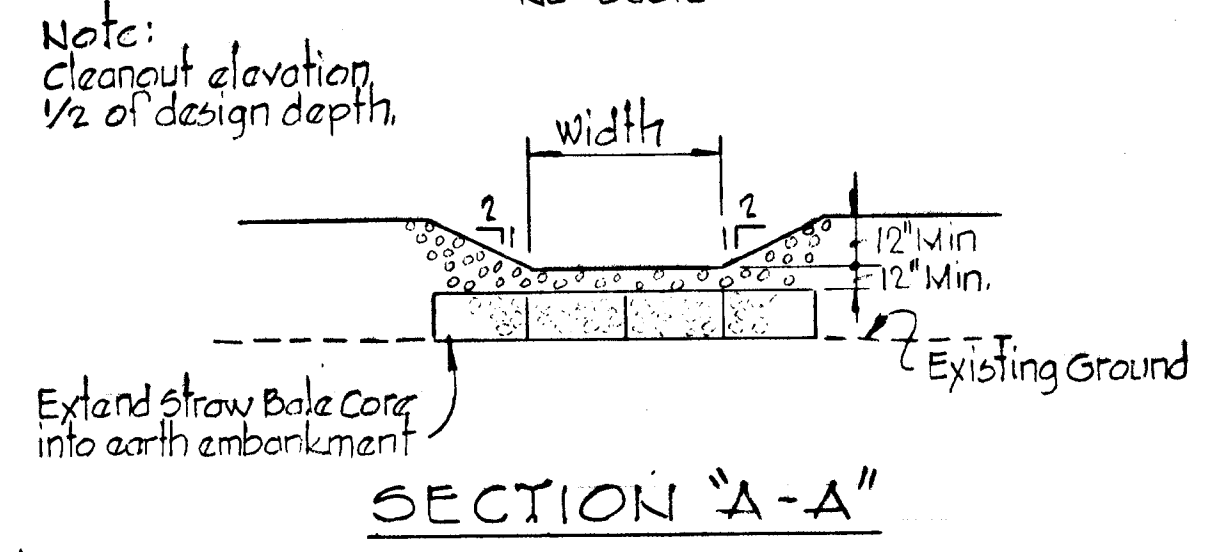
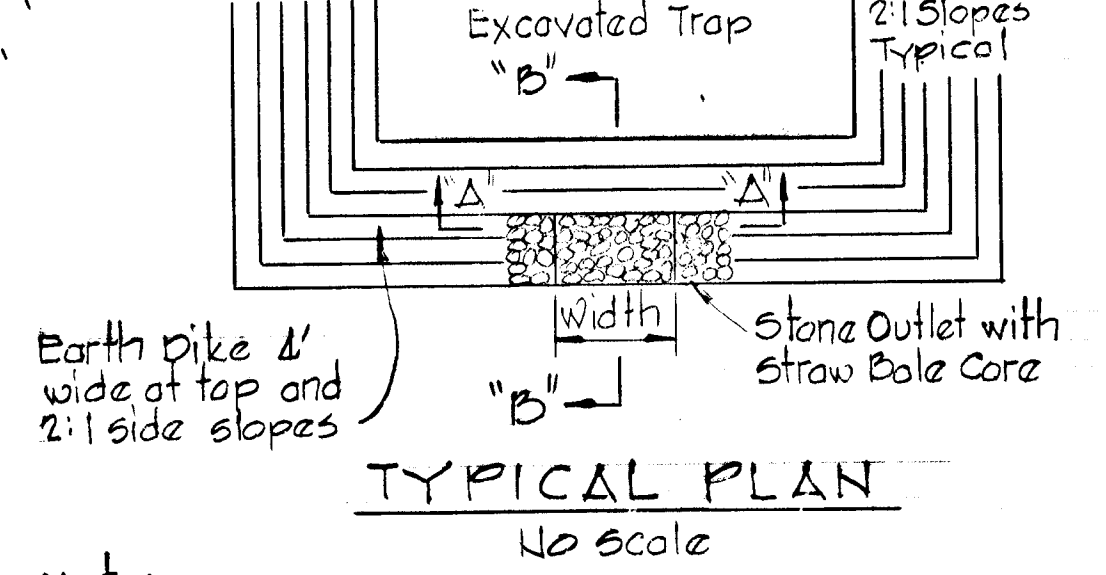


Rev. Date	Rev. No.	Revision Description
DORSEY HALL 2ND ELECTION DISTRICT HOWARD COUNTY, MARYLAND		
OWNER AND DEVELOPER HOWARD RESEARCH AND DEVELOPMENT CORP.		
PROJECT AREA SECTION 1 AREA 1		
PROJECT TITLE PLUMTREE BRANCH CULVERT DETAILS		
SCALE As Shown		DATE
WHITMAN REQUARDT & ASSOCIATES ENGINEERS BALTIMORE, MARYLAND 21202		
<i>Kenneth A. McCord</i> KENNETH A. McCORD Registered Engineer No. 1974		

NOTE
THE LIMIT OF GRADING IN THE BORROW AREA WILL BE DETERMINED BY THE AMOUNT OF FILL REQUIRED FOR COLUMBIA ROAD.

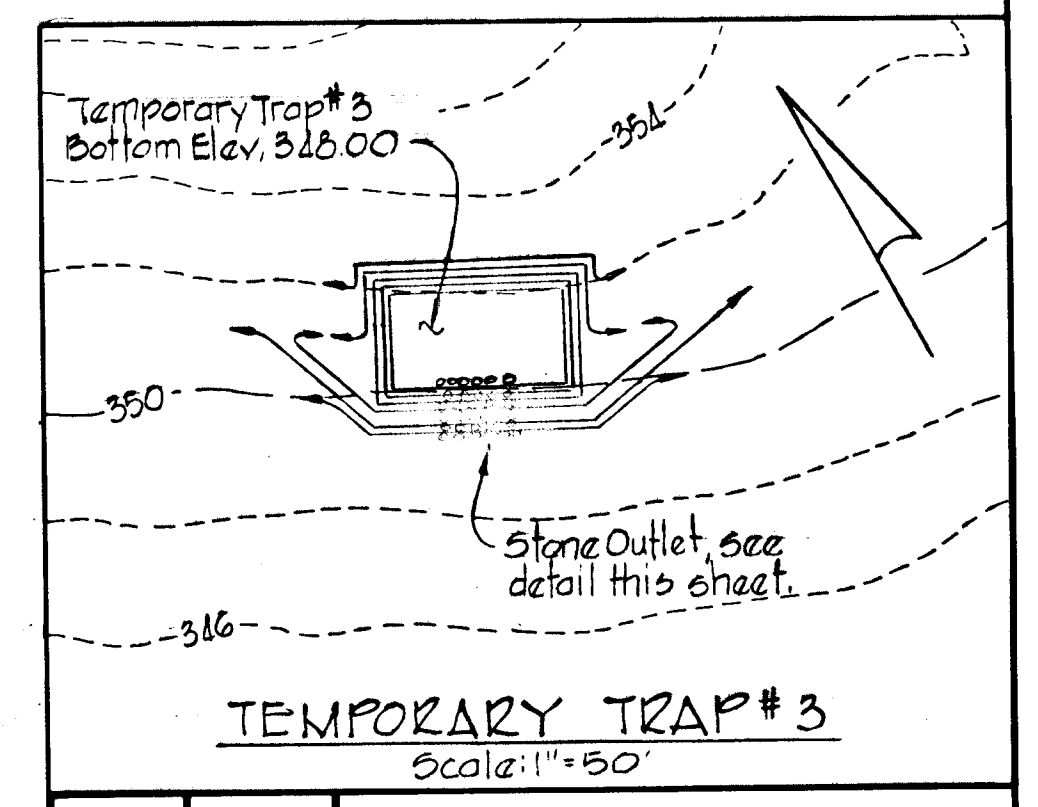


TRAP NO.	TOP DIKE ELEV.	WIDTH	BOTTOM ELEV.
1	346.00	11.4'	343.00
2	346.00	10.8'	343.00
3	351.00	13.8'	348.00
4	341.50	25.8'	337.50
5	365.00	13.2'	362.00
6	351.00	13.2'	345.50



DEPARTMENT OF PUBLIC WORKS
W. E. Woodford 8-13-79
CHIEF BUREAU OF ENGINEERING DATE
OFFICE OF PLANNING AND ZONING
Kenneth A. McCord 8/3/79
CHIEF DIVISION OF LAND DEVELOPMENT DATE

- TRAP #1
Drainage Area = 1.0 Acres
Disturbed Area = 1.0 Acres
Volume Required = 67x10=127 C.Y.
Volume Available = 127 C.Y.
Size of Trap = 23x50x3'
Stone Filter Width = 6x10=11.4'
- TRAP #2
Drainage Area = 3.3 Acres
Disturbed Area = 3.3 Acres
Volume Required = 67x3.3=221 C.Y.
Volume Available = 221 C.Y.
Size of Trap = 32x62x3'
Stone Filter Width = 6x3.3=19.8'
- TRAP #3
Drainage Area = 2.3 Acres
Disturbed Area = 2.3 Acres
Volume Required = 67x2.3=154 C.Y.
Volume Available = 154 C.Y.
Size of Trap = 20x48x3'
Stone Filter Width = 6x2.3=13.8'
- TRAP #4
Drainage Area = 4.3 Acres
Disturbed Area = 4.3 Acres
Volume Required = 67x4.3=288 C.Y.
Volume Available = 288 C.Y.
Size of Trap = 40x65x3'
Stone Filter Width = 6x4.3=25.8'



Rev. Date	Rev. No.	Revision Description

DORSEY HALL
2ND ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

OWNER AND DEVELOPER
HOWARD RESEARCH AND DEVELOPMENT CORP.

PROJECT AREA
SECTION I AREA I

PROJECT TITLE
BORROW & SPOIL DISPOSAL AREAS
GRADING AND SEDIMENT CONTROL

SCALE: As Shown DATE

WHITMAN, REQUARDT & ASSOCIATES
ENGINEERS
BALTIMORE, MARYLAND 21202

Kenneth A. McCord
Registered Engineer
No. 1974

CERTIFICATION BY THE DEVELOPER
"I certify that all development and or construction will be done according to this plan of development and plan for erosion and sediment control, and I also authorize periodic on-site inspection by the Howard Soil Conservation District or their authorized agents as are deemed necessary."
Walter E. Woodford 8-14-78
DATE: 8-14-78

CERTIFICATION BY THE ENGINEER
"I CERTIFY THAT THIS PLAN FOR EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT."
Kenneth A. McCord 8-14-78
DATE: 8-14-78
KENNETH A. McCORD, P.E. 1974

Reviewed for HOWARD SCD and meets Technical Requirements
Walter E. Woodford Date 8/13/79
Signature
U.S. Soil Conservation Service

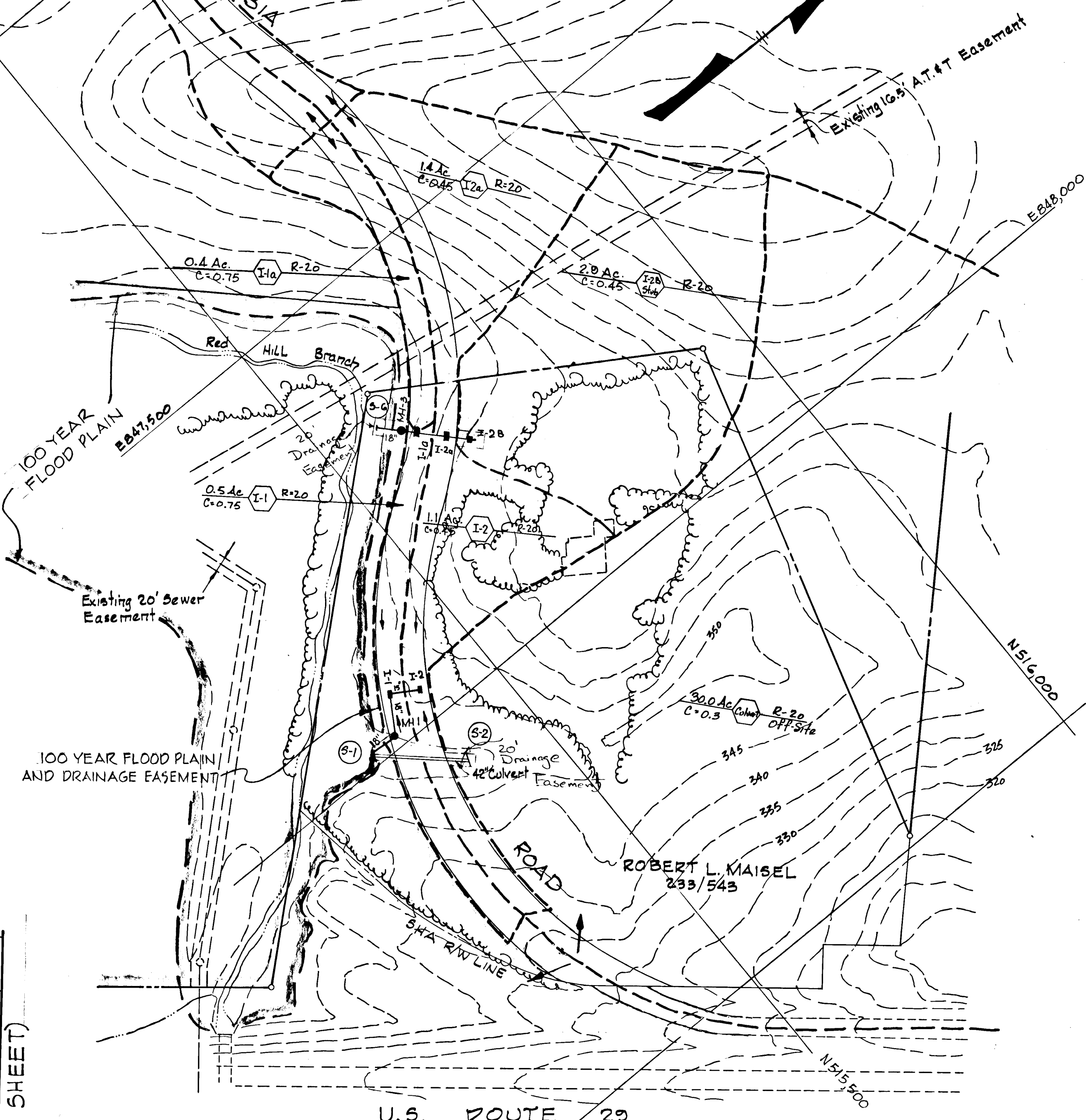
THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT
Approved Walter E. Woodford Date 8-13-79
Howard SCD

F-79-46

DEPARTMENT OF PUBLIC WORKS
W.O. Fallett 8-13-79
 CHIEF, BUREAU OF ENGINEERING
 OFFICE OF PLANNING AND ZONING
A. R. Ripley 8/3/79
 CHIEF, DIVISION OF LAND DEVELOPMENT

"B-B" MATCH LINE (SEE THIS SHEET)

"A-A" MATCH LINE (SEE THIS SHEET)



NOTE
 For Culvert Drainage Area See Exhibit
 in Drainage Computations

WHITMAN, REQUARDT & ASSOCIATES
 ENGINEERS
 BALTIMORE, MARYLAND
Kenneth A. McCord
 KENNETH A. MCCORD P.E. NC 1974

Rev. Date	Rev. No.	Revision Description
DORSEY HALL SECTION I AREA I DRAINAGE AREA MAP 2 ND ELECTION DISTRICT OF HOWARD COUNTY, MD OWNER AND DEVELOPER HOWARD RESEARCH AND DEVELOPMENT CORP COLUMBIA, MARYLAND Date: _____ Scale: 1"=100'		

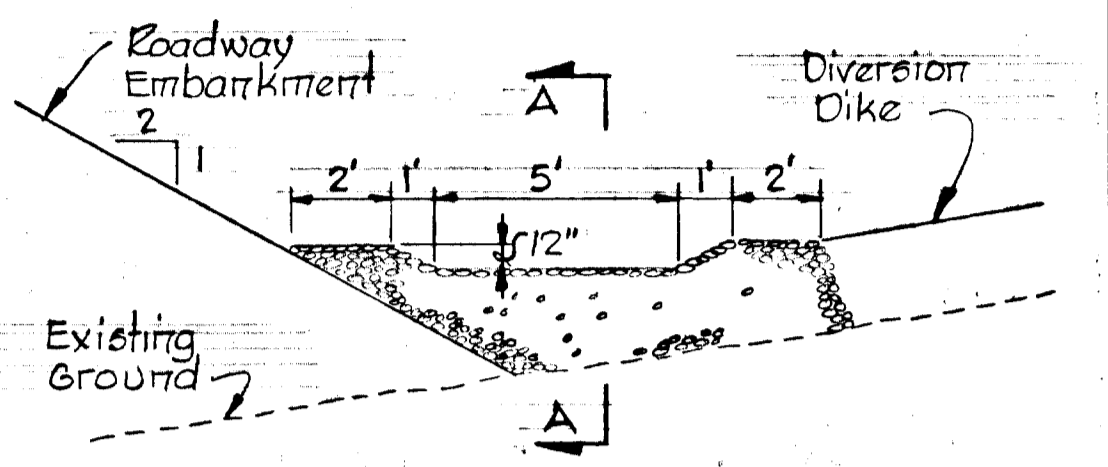
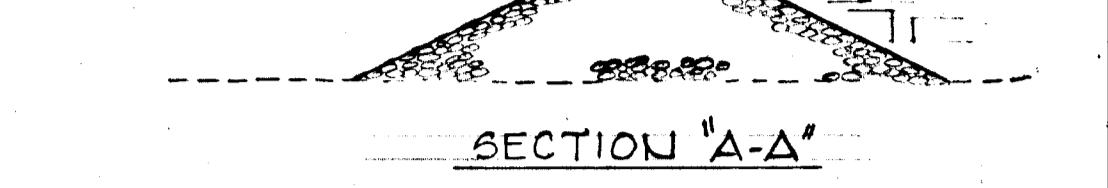
LEGEND

- - - - - Existing Contour (2' Interval)
- Proposed Contour (2' Interval)

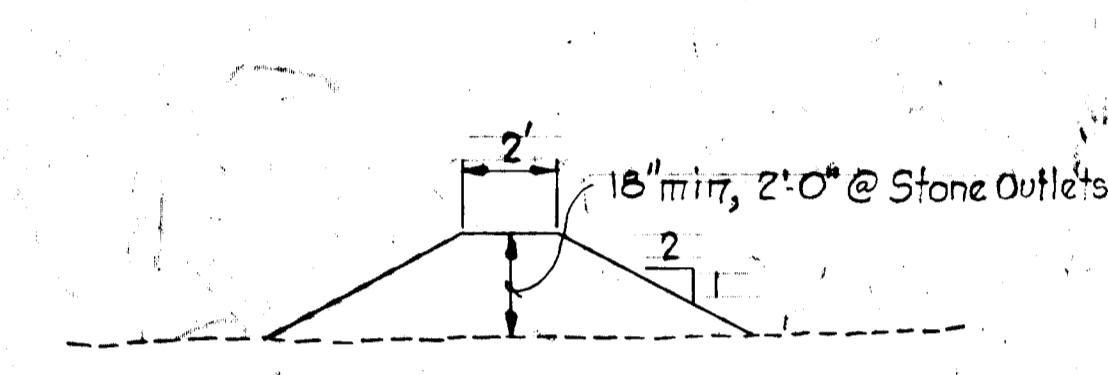
DEPARTMENT OF PUBLIC WORKS
W.O. Pallet 8-13-79
 CHIEF, BUREAU OF ENGINEERING DATE

OFFICE OF PLANNING AND ZONING
W.O. Pallet 8/3/79
 CHIEF, DIVISION OF LAND PLANNING DATE

Crushed stone shall meet
 AASHTO designation M-43, size
 No 2 or 24 or its equivalent
 such as MSHA No. 2

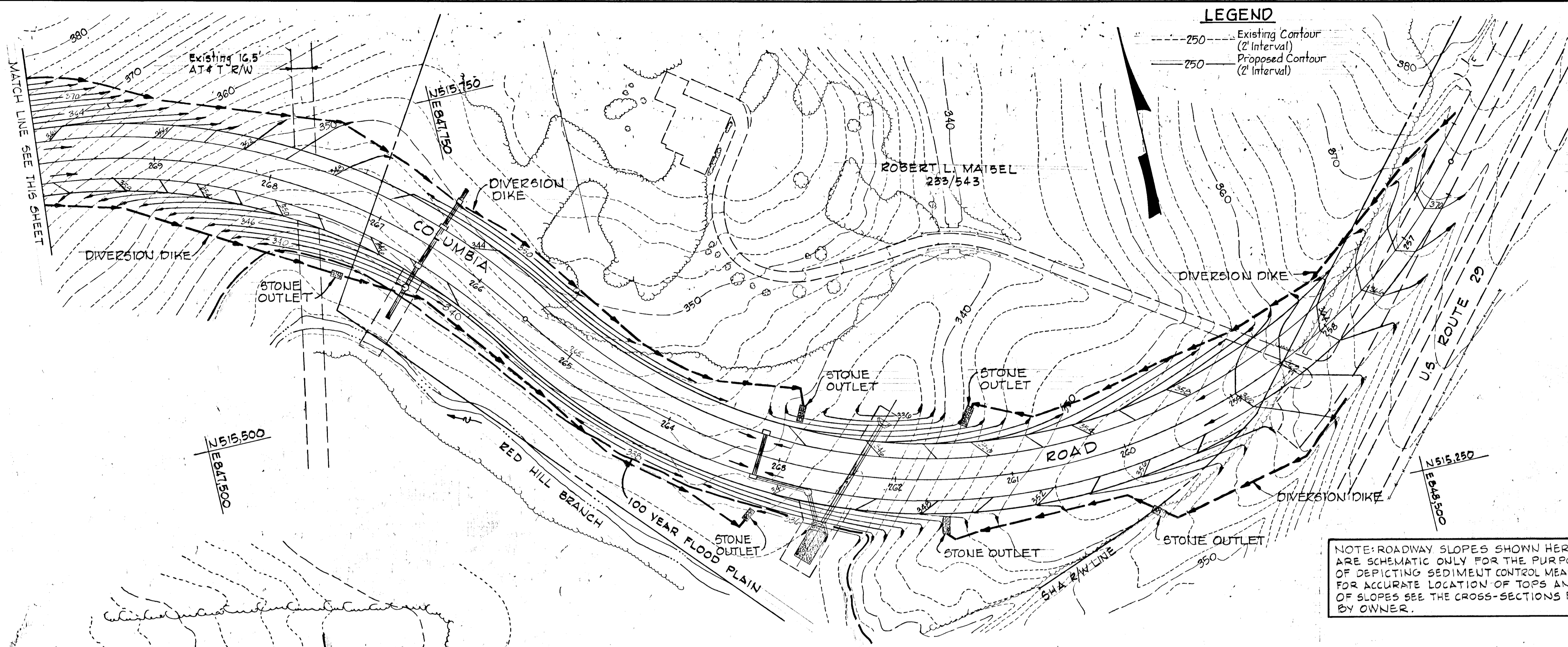


DETAIL - STONE OUTLET
 No Scale

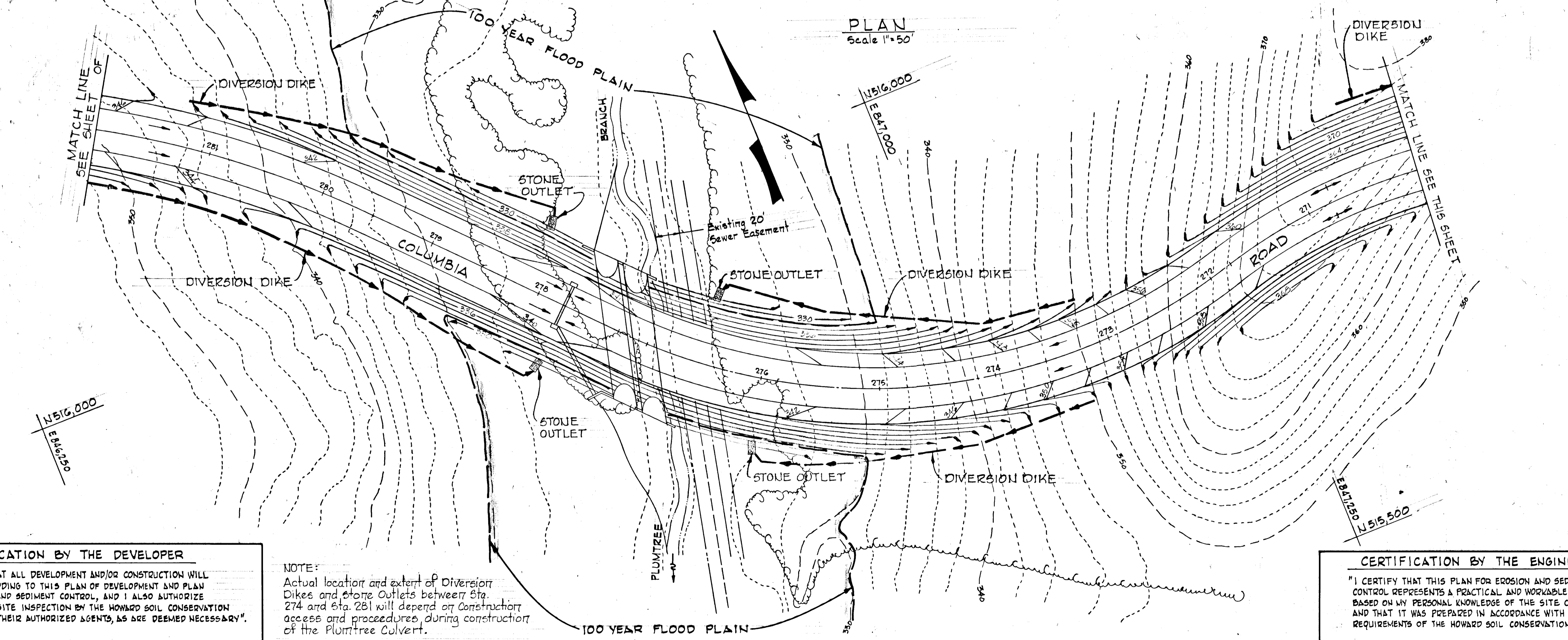


DIVERSION DIKE
 No Scale

NOTE: ROADWAY SLOPES SHOWN HEREON
 ARE SCHEMATIC ONLY FOR THE PURPOSE
 OF DEPICTING SEDIMENT CONTROL MEASURES.
 FOR ACCURATE LOCATION OF TOPS AND TOES
 OF SLOPES SEE THE CROSS-SECTIONS PROVIDED
 BY OWNER.



PLAN
 Scale 1"=50'



PLAN
 Scale 1"=50'

REVIEWED FOR HOWARD S.C.D.
 AND MEETS TECHNICAL REQUIREMENTS
W. B. Smith DATE 8/13/79
 SIGNATURE
 U.S. SOIL CONSERVATION SERVICE

THIS DEVELOPMENT PLAN IS APPROVED
 FOR SOIL EROSION AND SEDIMENT
 CONTROL BY THE HOWARD SOIL
 CONSERVATION DISTRICT.
 APPROVED: *Wm. R. ...* DATE: 8-3-79
 HOWARD S.C.D.

REV. DATE	REV. NO.	REVISION DESCRIPTION
		DORSEY HALL 2ND. ELECTION DISTRICT HOWARD COUNTY, MARYLAND
		OWNER AND DEVELOPER HOWARD RESEARCH AND DEVELOPMENT CORPORATION
		PROJECT AREA SECTION AREA 1
		PROJECT TITLE SEDIMENT CONTROL
		SCALE: AS SHOWN DATE:
		WHITMAN, REQUARDT AND ASSOCIATES ENGINEERS BALTIMORE, MARYLAND 21202
		<i>Kenneth A. McCord</i> KENNETH A. MCCORD REGISTERED ENGINEER NO. 1974

CERTIFICATION BY THE DEVELOPER
 "I CERTIFY THAT ALL DEVELOPMENT AND/OR CONSTRUCTION WILL
 BE DONE ACCORDING TO THIS PLAN OF DEVELOPMENT AND PLAN
 FOR EROSION AND SEDIMENT CONTROL, AND I ALSO AUTHORIZE
 PERIODIC ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION
 DISTRICT OR THEIR AUTHORIZED AGENTS, AS ARE DEEMED NECESSARY."
Walter E. Woodford 7-29-79
 WALTER E. WOODFORD DATE

NOTE:
 Actual location and extent of Diversion
 Dikes and Stone Outlets between Sta.
 274 and Sta. 281 will depend on construction
 access and procedures during construction
 of the Plumtree Culvert.

CERTIFICATION BY THE ENGINEER
 "I CERTIFY THAT THIS PLAN FOR EROSION AND SEDIMENT
 CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN
 BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS
 AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE
 REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT."
Kenneth A. McCord 7-29-79
 KENNETH A. MCCORD, P.E. 1974 DATE

REVIEWED FOR HOWARD S.C.D. AND MEETS TECHNICAL REQUIREMENTS
 C.W. Smith DATE: 8/3/79
 SIGNATURE U.S. SOIL CONSERVATION SERVICE

THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.
 APPROVED: Wm. Rowe DATE: 8-3-79
 HOWARD S.C.D.

NOTE: ROADWAY SLOPES SHOWN HEREON ARE SCHEMATIC ONLY FOR THE PURPOSE OF DEPICTING SEDIMENT CONTROL MEASURES. FOR ACCURATE LOCATION OF TOPS AND TOES OF SLOPES SEE THE CROSS-SECTIONS PROVIDED BY OWNER.

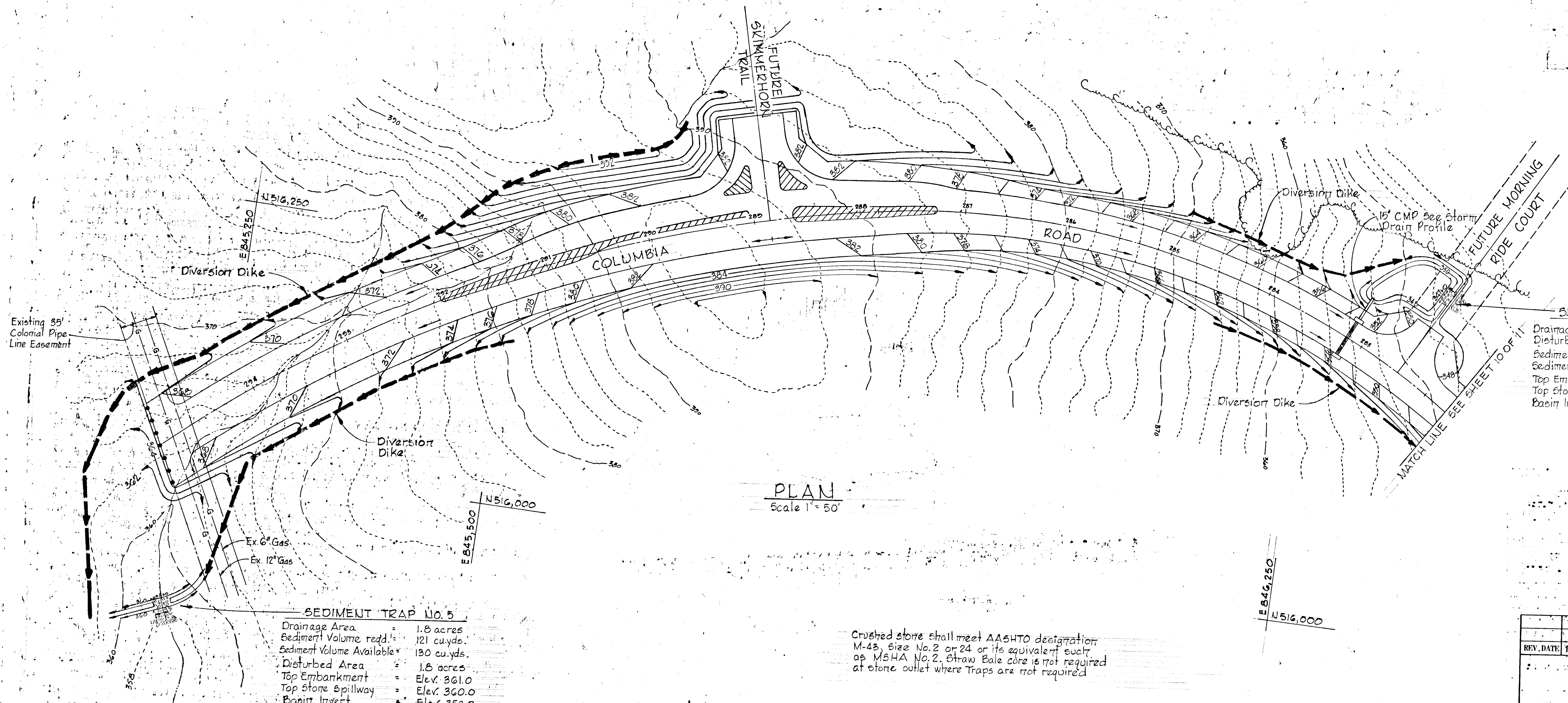
SPECIAL NOTES

- See "Sequence of Construction" on Sheet 1 of 11.
- The sediment control measures shall be constructed as shown on sheets B, 10 and this sheet.
- All diversion dikes shall be seeded as specified in notes 5 and 6. All other surfaces to be seeded shall be permanently seeded. See specifications on Sheet 1 of 11.
- The diversion dikes shall be hydroseeded as follows:
 - a. ground limestone (50#/1000⁺), one ton/acre.
 - b. Fertilizer 10-10-10 (25#/1000⁺), 1/2 ton/acre.
 - c. Seed - Italian Rye Grass, 40#/acre.
- Mulch with straw at the rate of 50#/1000⁺ or one ton per acre. Anchor with asphalt at the rate of 480 gallons/acre.

DEPARTMENT OF PUBLIC WORKS
 200 P Street DATE: 8-13-79
 CHIEF, BUREAU OF ENGINEERING
 OFFICE OF PLANNING AND ZONING DATE: 8/3/79
 CHIEF, DIVISION OF LAND PLANNING

LEGEND

- - - 250 Existing Contour (2' Interval)
- 250 Proposed Contour (2' Interval)



PLAN
 Scale 1" = 50'

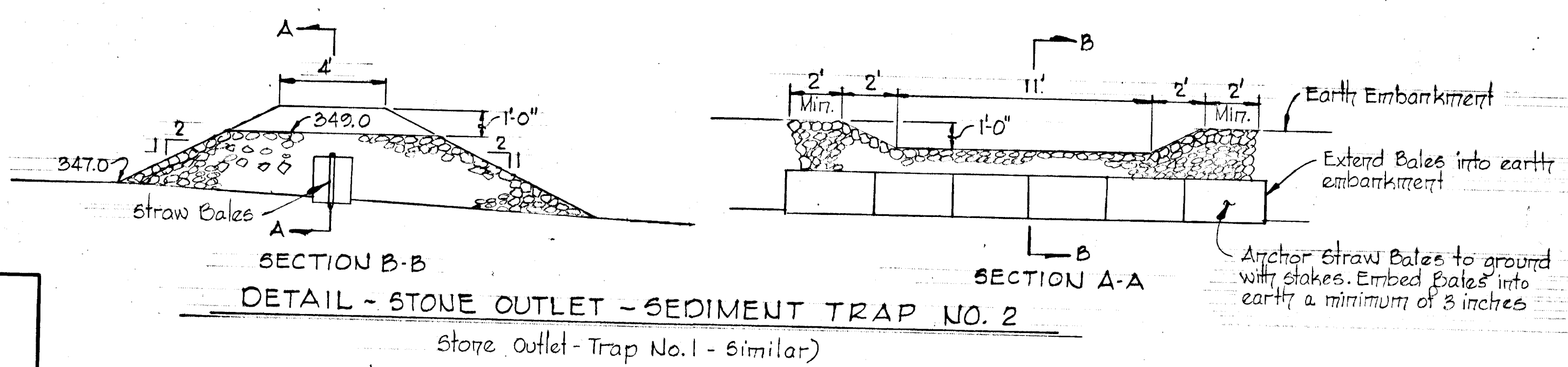
SEDIMENT TRAP NO. 6

Drainage Area	= 1.7 acres
Disturbed Area	= 1.7 acres
Sediment Volume reqd.	= 114 cu. yds.
Sediment Volume available	= 115 cu. yds.
Top Embankment	= Elev. 350.0
Top Stone Spillway	= Elev. 349.0
Basin Invert	= Elev. 347.0

SEDIMENT TRAP NO. 5

Drainage Area	= 1.8 acres
Sediment Volume reqd.	= 121 cu. yds.
Sediment Volume Available	= 130 cu. yds.
Disturbed Area	= 1.8 acres
Top Embankment	= Elev. 361.0
Top Stone Spillway	= Elev. 360.0
Basin Invert	= Elev. 358.0

Crushed stone shall meet AASHTO designation M-43, size No. 2 or 24 or its equivalent such as MSHA No. 2. Straw Bale core is not required at stone outlet where Traps are not required.



CERTIFICATION BY THE DEVELOPER
 "I certify that all development and/or construction will be done according to this plan of development and plan for Erosion and Sediment Control and I also authorize periodic on-site inspection by the Howard Soil Conservation District or their authorized agents as are deemed necessary."
 Walter E. Woodford DATE: 2-28-79

CERTIFICATION BY THE ENGINEER
 "I certify that this plan for Erosion and Sediment Control represents a practical and workable plan based on my personal knowledge of the site conditions and that it was prepared in accordance with the requirements of the Howard Soil Conservation District."
 Kenneth A. McCord PE, 1974 DATE: 2-26-79

REV. DATE	REV. NO.	REVISION DESCRIPTION
DORSEY HALL 2ND. ELECTION DISTRICT HOWARD COUNTY, MARYLAND		
OWNER AND DEVELOPER HOWARD RESEARCH AND DEVELOPMENT CORPORATION		
PROJECT AREA: SECTION I AREA I		
PROJECT TITLE: SEDIMENT CONTROL		
SCALE: AS SHOWN		DATE:
WHITMAN, REQUARDT AND ASSOCIATES ENGINEERS BALTIMORE, MARYLAND 21202		
Kenneth A. McCord REGISTERED ENGINEER NO. 1874		